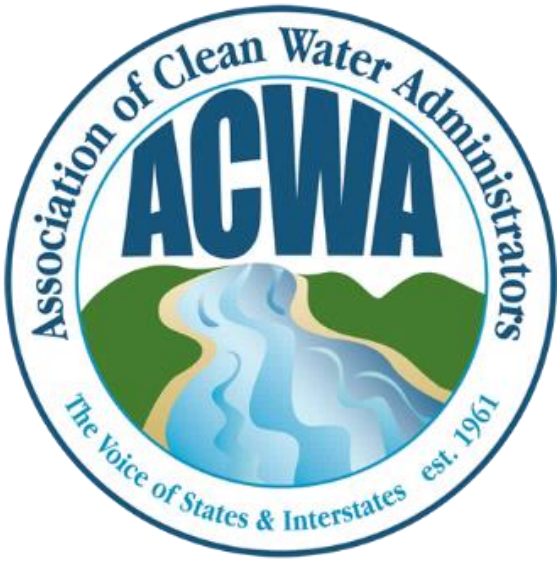
NUTRIENT REDUCTION PROGRESS TRACKER
VERSION 1.0 – 2017



REPORT

March 2018

Index

Introduction

The Nutrients Working Group ("NWG"), a partnership between ACWA, EPA, and ASDWA, began work in 2014 to identify a set of measures that demonstrated progress toward nutrient reduction in the nation's waters. States expressed concern that the only national metric for demonstrating progress on addressing nutrient pollution was the establishment of nitrogen and phosphorus criteria for lakes, estuaries, and flowing waters. States believed there was a potential for more robust national metrics to demonstrate state actions taken to reduce nutrient loads in conjunction with the development of nutrient criteria. The desire to demonstrate progress on nutrient reduction became more pertinent with EPA's release of Nancy Stoner's 2011 memorandum titled "Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions" (the "Stoner Memo"). The Stoner Memo described a framework states could utilize to focus near term efforts on nutrient reduction while they continued to develop nutrient criteria. The 2016 Joel Beauvais memorandum, titled "Renewed Call to Action to Reduce Nutrient Pollution and Support for Incremental Actions to Protect Water Quality and Public Health" (the "Beauvais Memo"), highlighted the continued importance of these efforts.

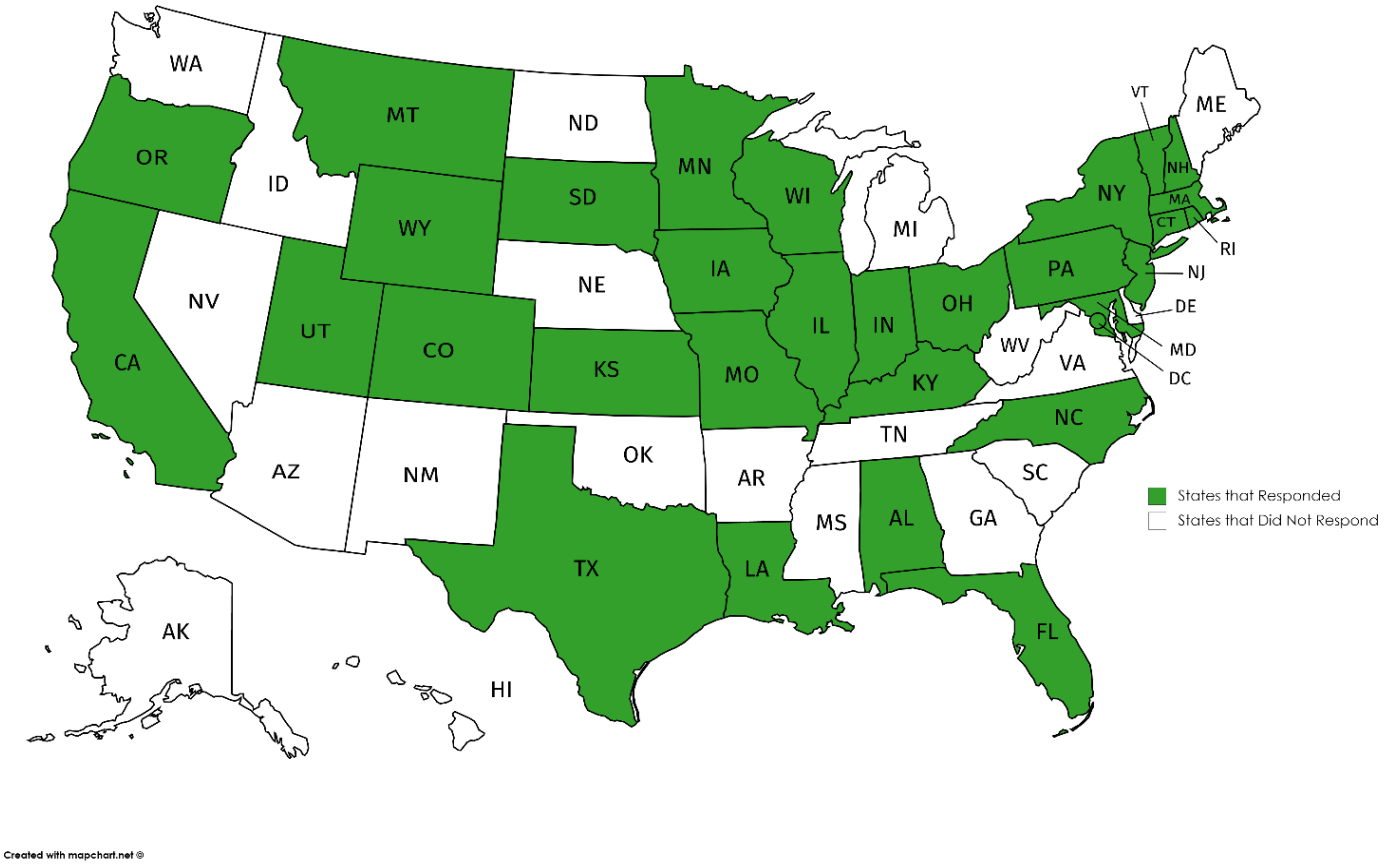
One of the key questions posed to the NWG was how to demonstrate progress on nutrient reduction envisioned by the Stoner Memo and the Beauvais Memo. The NWG concluded that a short, easy-to-complete form of agreed-upon measures that states would complete on a routine basis would be the appropriate path forward. To that end, the NWG developed an initial survey to begin to ascertain what small, core set of outputs and outcomes states agreed would best demonstrate nutrient reduction progress. The initial survey detailing numerous possible metrics was sent to state ACWA members in 2015 with the goal of finding common threads from which to base a second, more specific survey.

Based on analysis of the responses from the first survey, the NWG spent significant time in early 2016 preparing the second survey to focus on the common threads resulting in a more specific and concise survey. The second survey was sent out in May 2016 and received a positive response from the states – 57 responses from 41 states and the District of Columbia. The NWG took the results and listed the metrics in priority order based on a simple weighting system – a weight of 1 for low priority, 2 for medium priority, and 3 for high priority responses. The weighting system was then normalized to account for the fact not every respondent answered every question. Using feedback on the top ranked metrics from the 2016 ACWA Annual Meeting and from other groups such as ASDWA, the NWG worked on a core group of items to track in a regularly scheduled tracker. It was determined that the core group would include outputs and outcomes from various program areas including permitting, assessment, and drinking water. In February 2017, the NWG finalized a beta version of the tracker and released it to Iowa, Oregon, Wisconsin, Kansas, and North Carolina for testing. Using the results from the beta test and feedback at the March 2017 ACWA Mid-Year Meeting and the August 2017 ACWA Annual Meeting, the NWG finalized Version 1.0 of the tracker. Released in September 2017, the *Nutrients Reduction Progress Tracker Version 1.0 – 2017* received responses from 31 states (including the District of Columbia).

This report provides an overview of the responses received. The report is organized in the same manner as the tracker, providing graphs and narrative summaries of the data received for the five substantive sections of the tracker.

Thank you to members of the NWG that assisted in crafting the *Nutrient Reduction Progress Tracker Version 1.0 – 2017*, reviewing the data, and editing this report.

Background



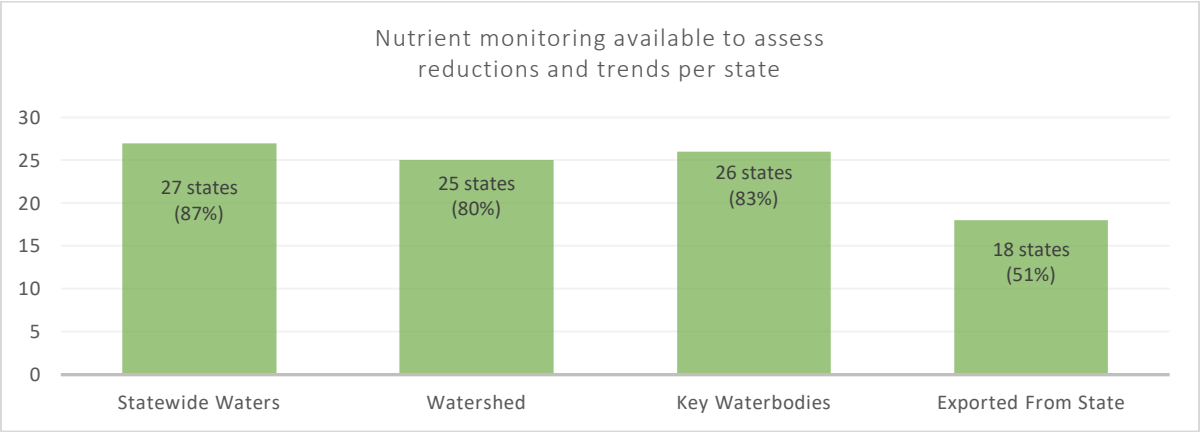
Thirty-one (31) states, including the District of Columbia, submitted responses to the tracker. While completion time varied among states, the median time it took a state to complete the tracker was around eight and a half (8.5) hours. EPA submitted responses to questions 9-13, 18-19, and 21 that cover all fifty (50) states. States were asked to review the data included in these responses.

The initial response to these questions will serve as a baseline from which to measure progress. Future iterations of the tracker will provide additional data to help determine trends, inform policy, and further analyze specific progress areas.

Part I: Statewide Strategy/Monitoring/Assessment

Questions 1 and 2 asked for the state name and contact person.

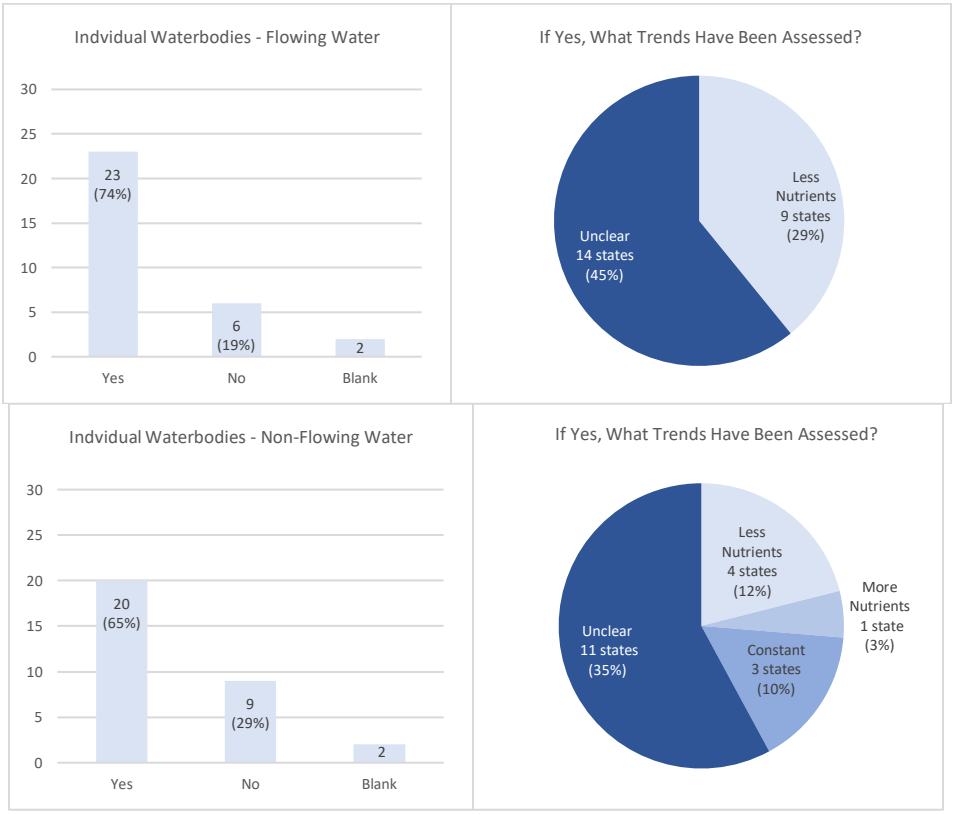
Question 3. Is ambient nutrient monitoring available in your state to assess reductions and trends (e.g., baseline, long term flow)?



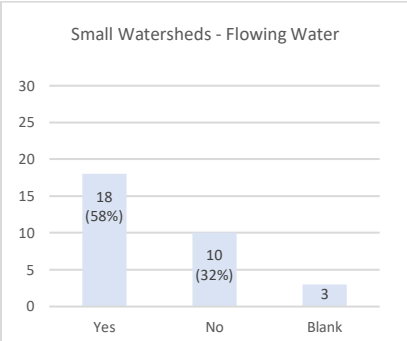
Sixteen (16) states, of the thirty-one (31) that responded, have all four (4) types of monitoring available. Four (4) states have only one (1) type of monitoring available.

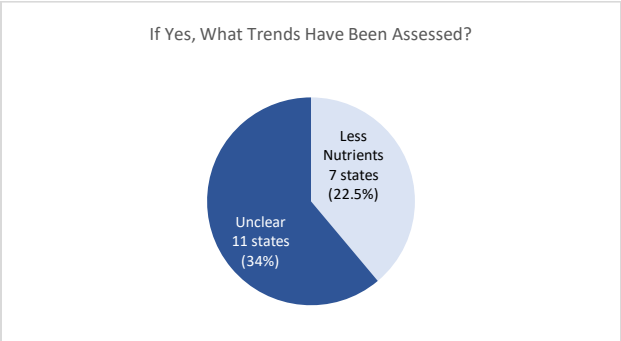
Question 4. Is your state assessing trends in nutrient loading using baseline and continued monitoring in the following range of waterbodies?

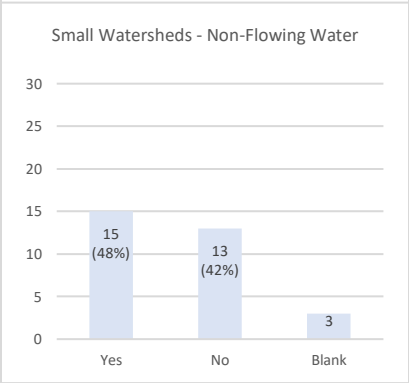
Individual Waterbodies:

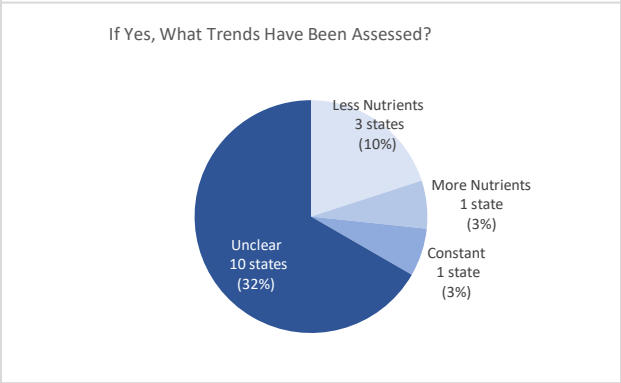


Small Watersheds:

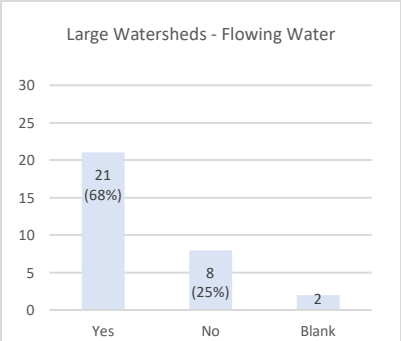


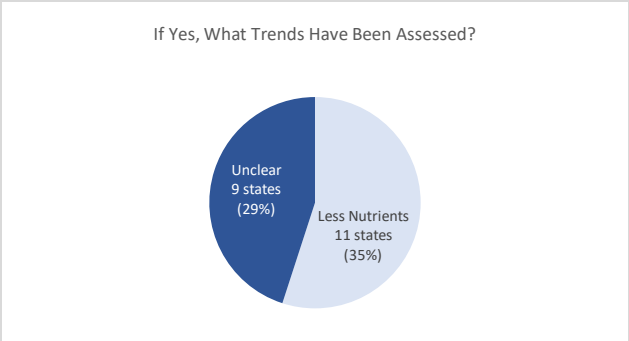


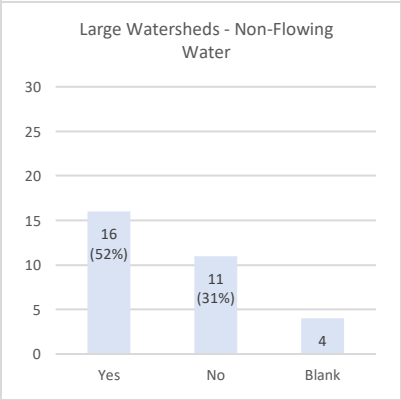


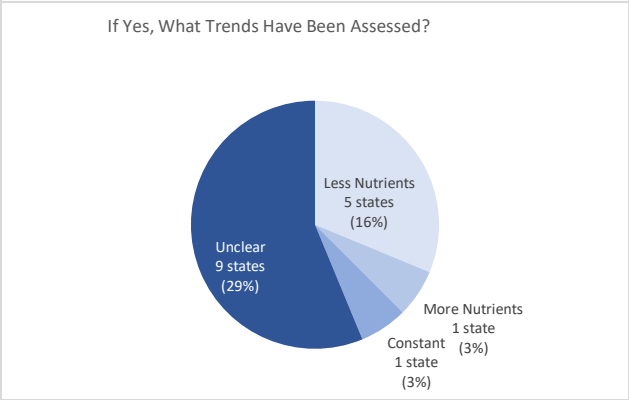


Large Watersheds:

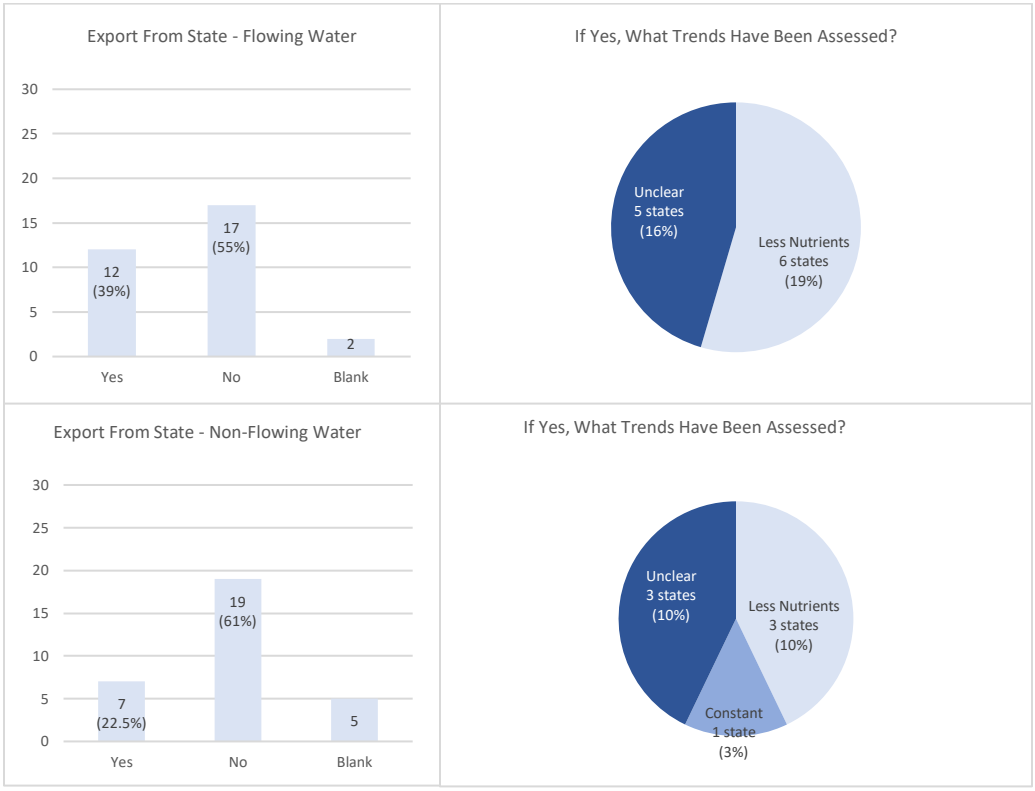






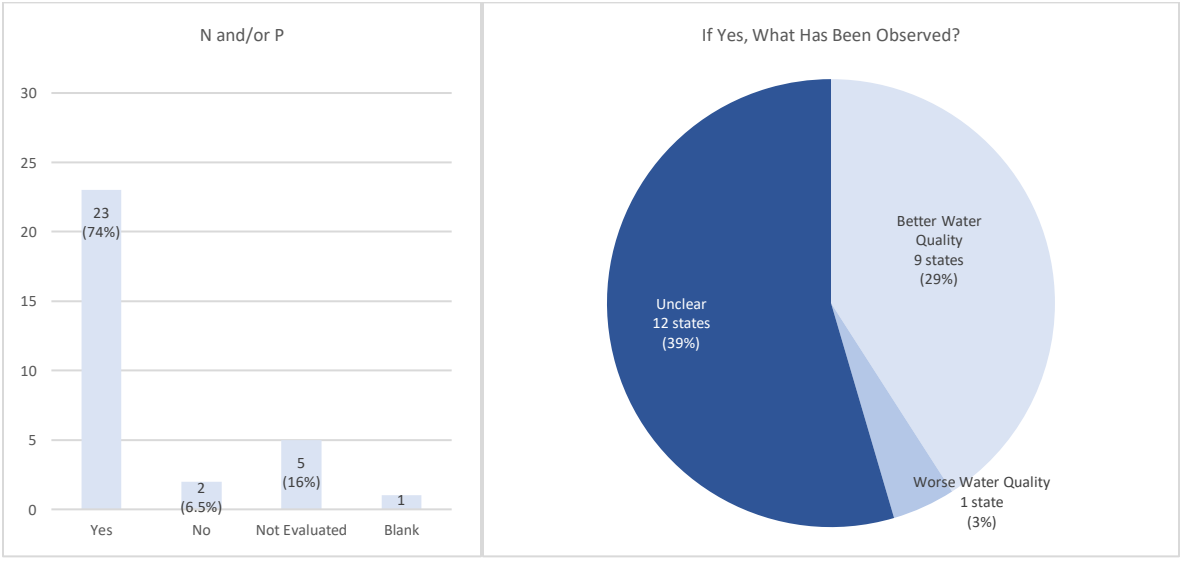


Export From State:

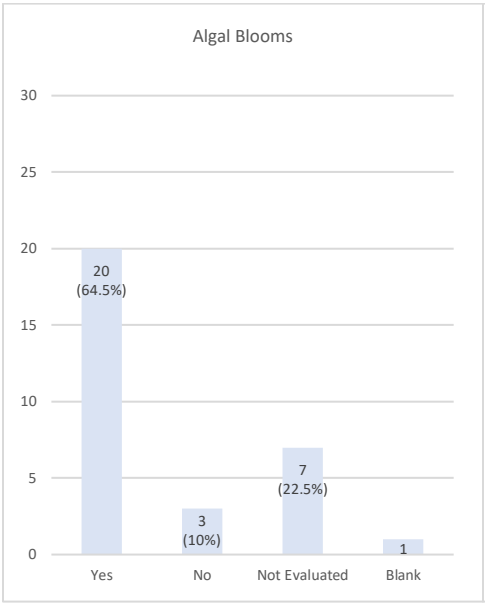


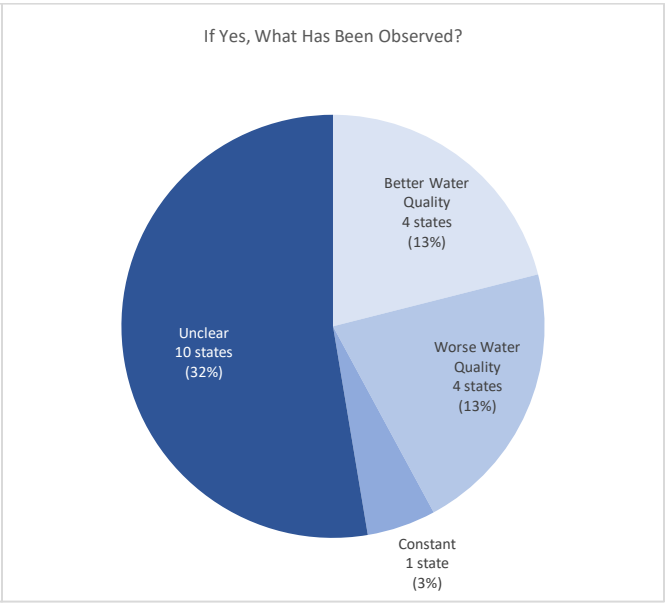
Question 5. Has your state observed and recorded demonstrated changes in water quality in state waterbodies for the following parameters?

N and/or P:

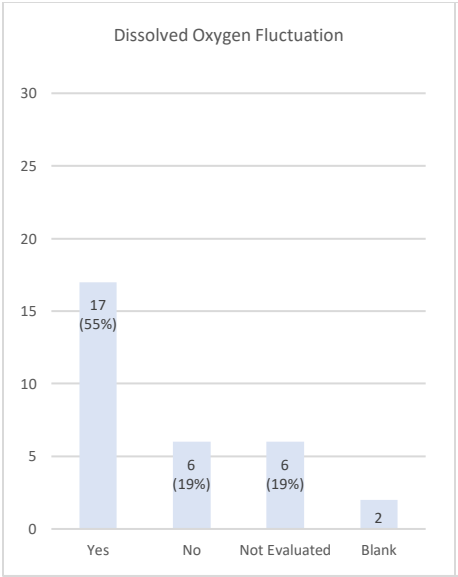


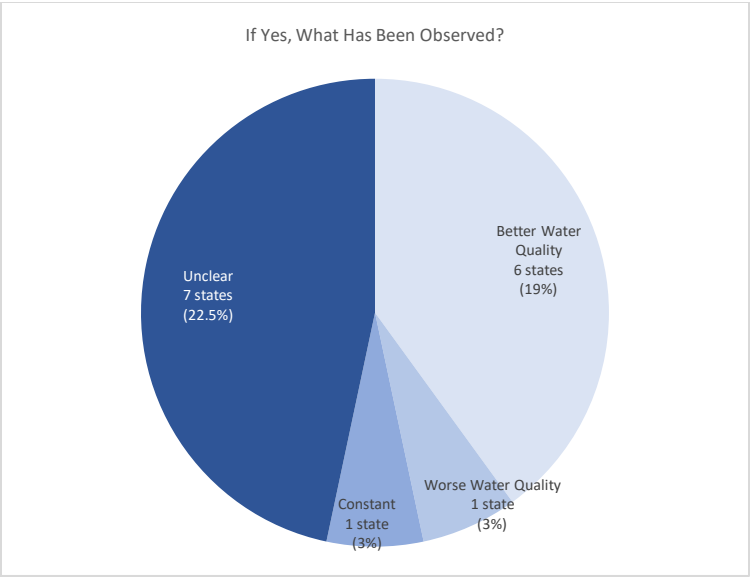
Algal Blooms:



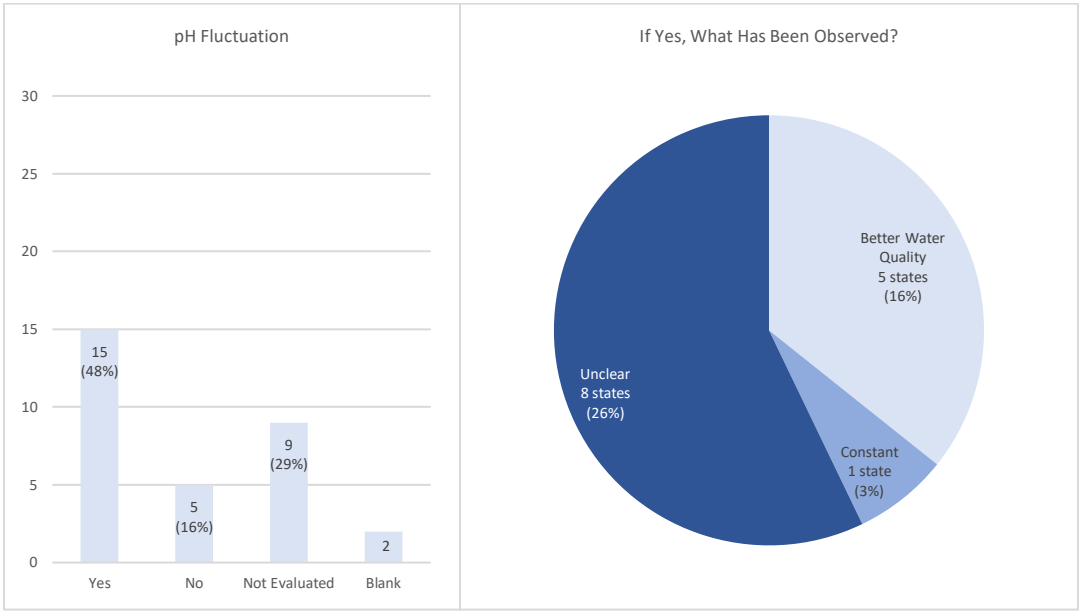


Dissolved Oxygen Fluctuation:

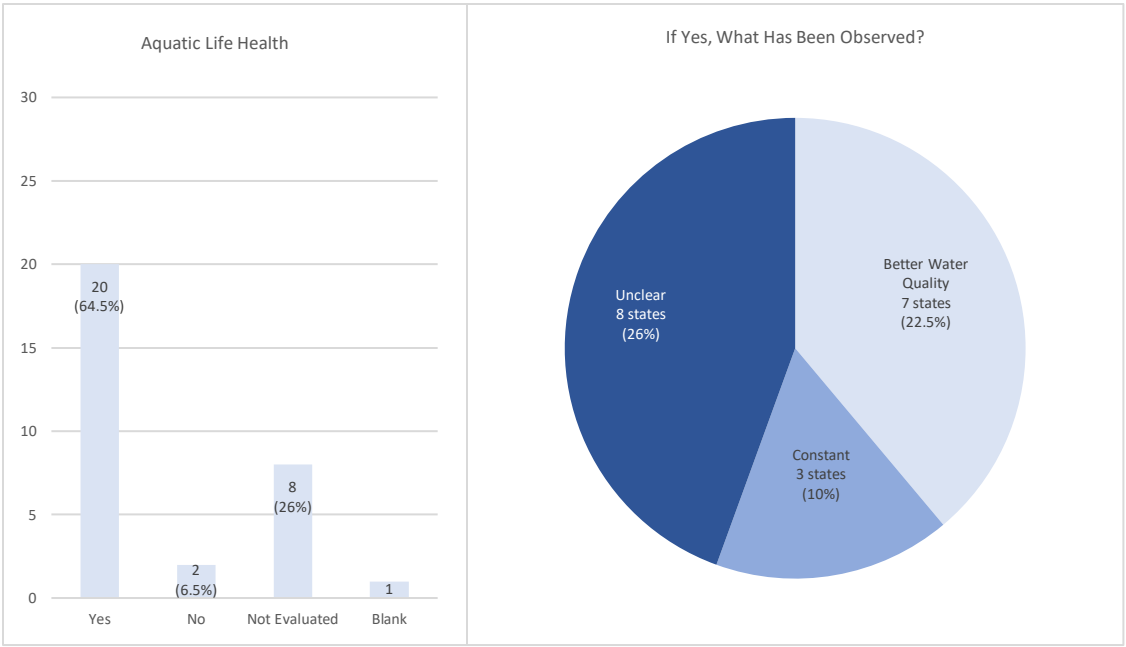




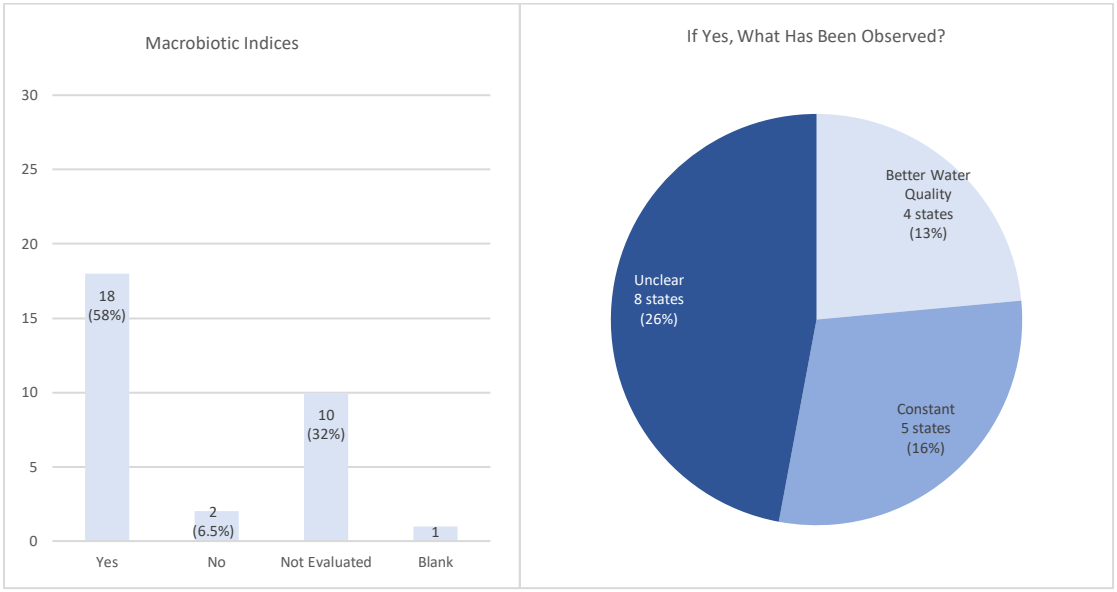
pH Fluctuation:



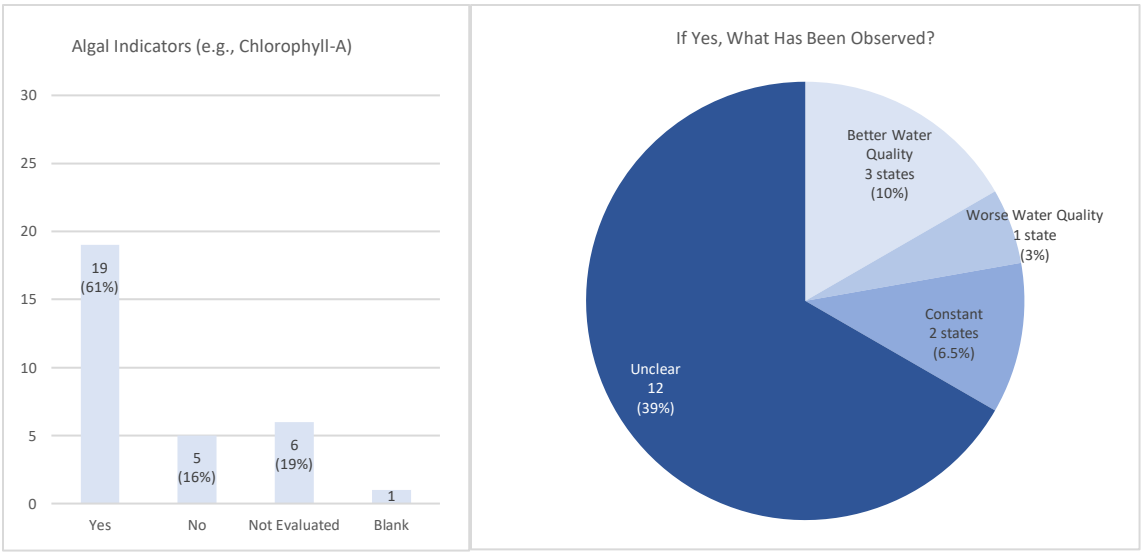
Aquatic Life Health:



Macrobiotic Indices:



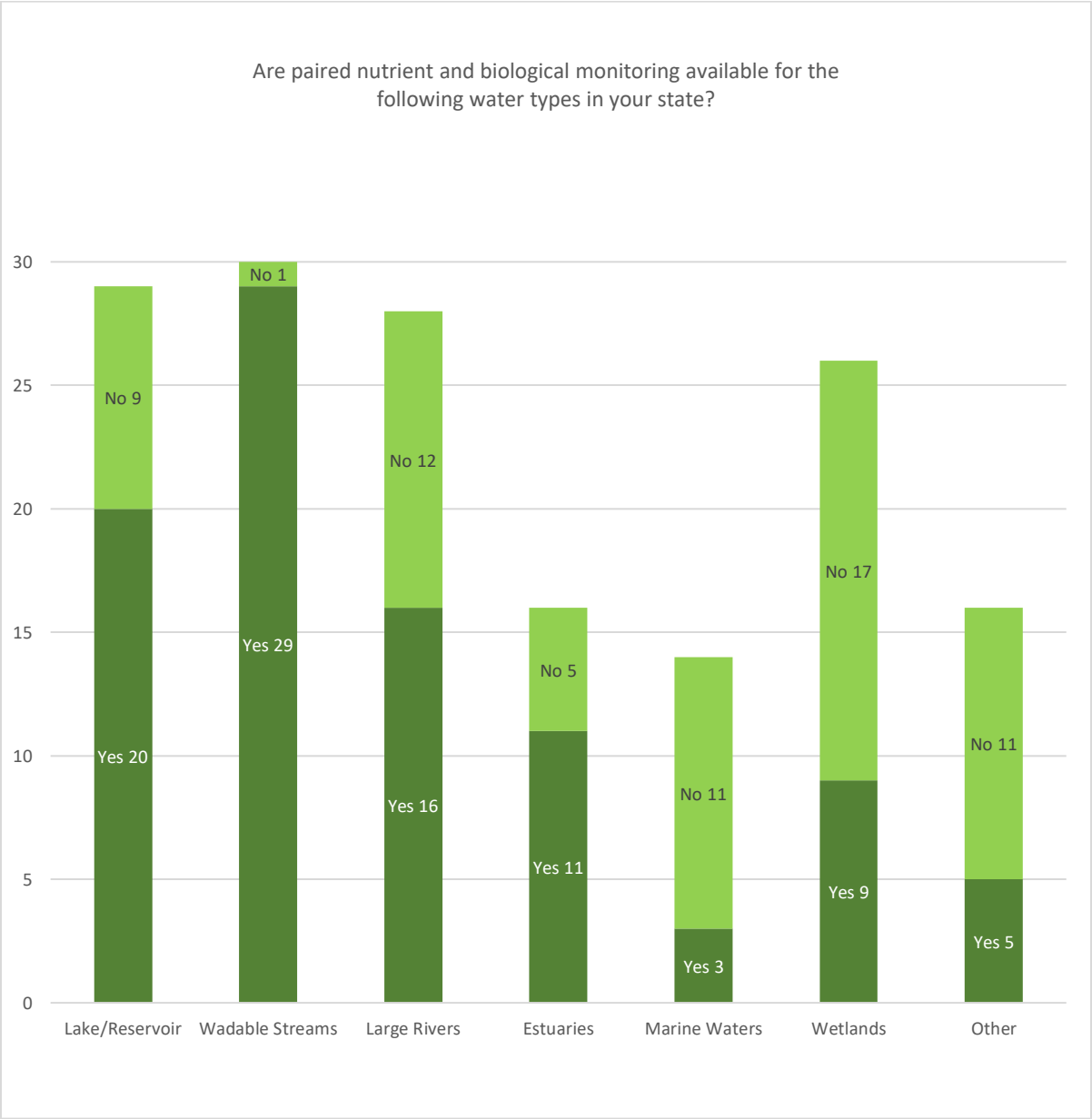
Algal Indicators (e.g., Chlorophyll-A):



Questions 3, 4, and 5 attempted to present overall trends regarding monitoring and assessing nutrients in state waters. Many state responders indicated that monitoring availability and trends are mixed throughout various state waterbodies, so overall trends are difficult to deduce. Also, since this is a baseline dataset, there is no comparison against which to assess.

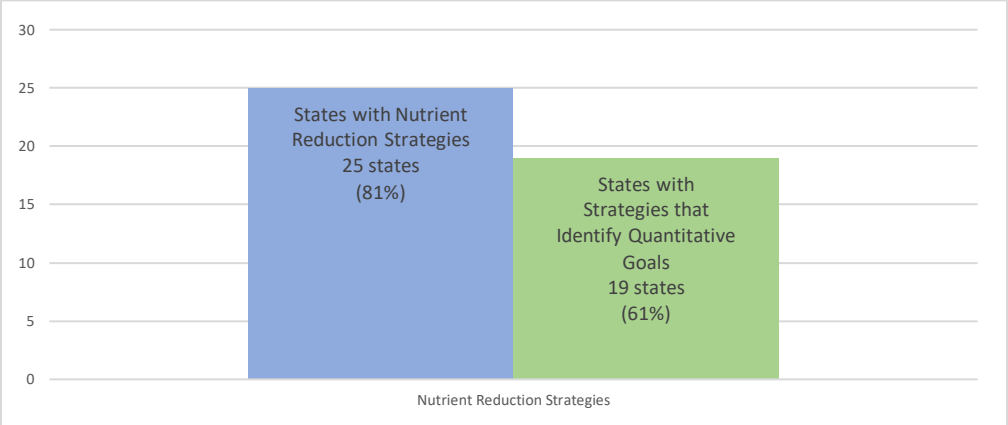
What can be taken away from Questions 3, 4, and 5 is that many states are monitoring for nutrients and their impacts in a variety of ways and attempting to recognize trends. Future versions of the tracker will go into more detail on monitoring and assessment to better determine patterns in the data relative to nutrient reduction.

Question 6. Are paired nutrient and biological monitoring available for the following water types in your state?



The columns do not equal thirty-one (31) as some states left categories blank and others answered, "Not Applicable". Five (5) states indicated that monitoring is available for "Other" waterbody types such as springs, estuarine embayments, and the Great Salt Lake.

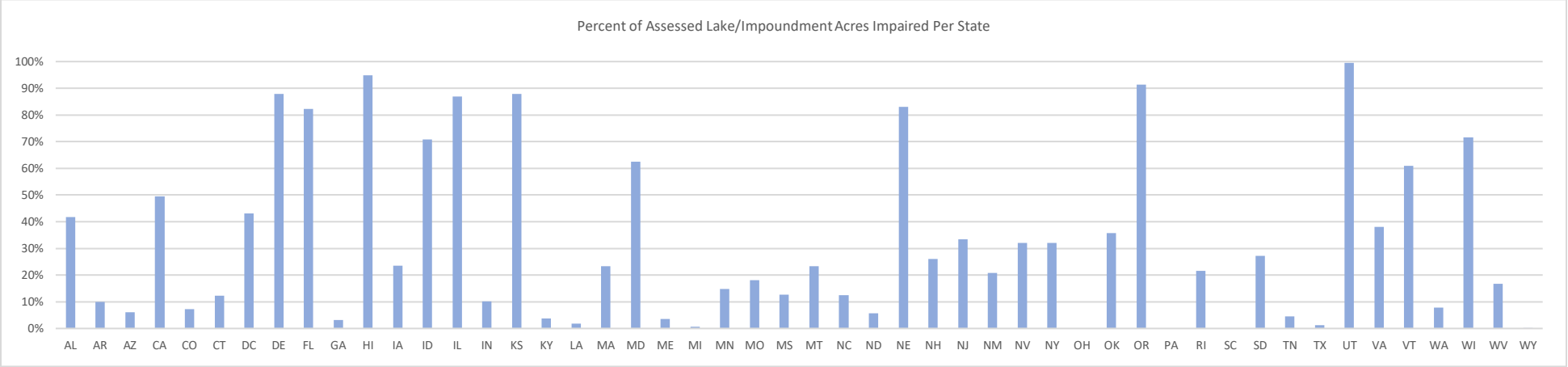
Question 7-8. Does your state have a nutrient reduction strategy? If your state has a nutrient reduction strategy, does the strategy identify quantitative goals?

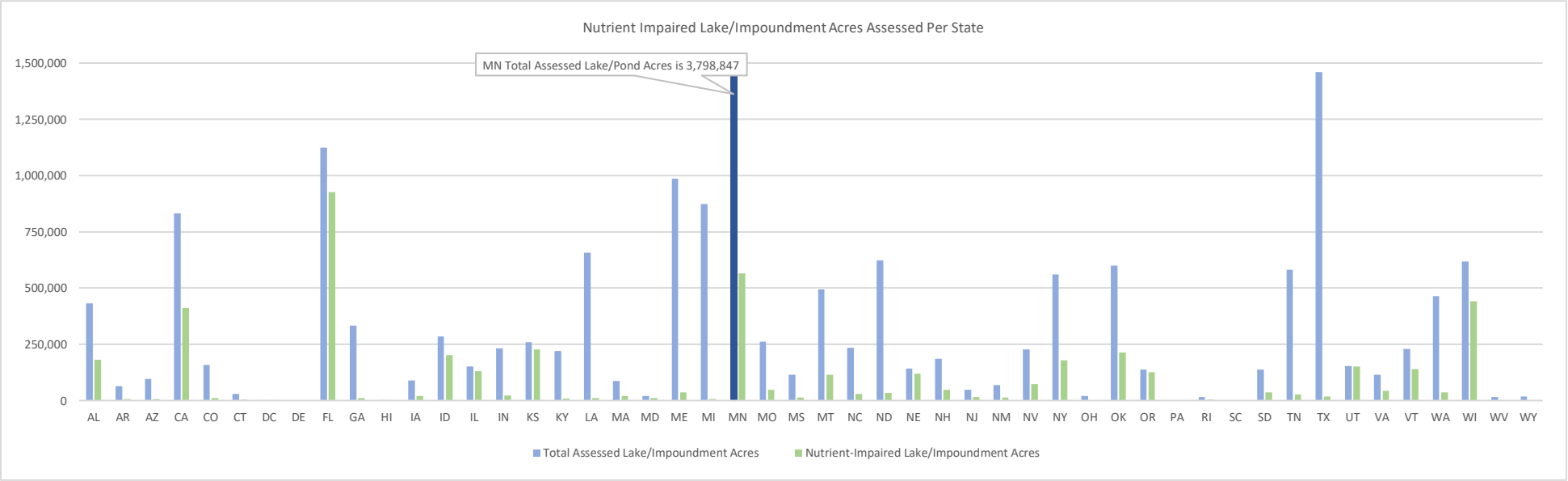


Twenty-five (25) states have some sort of strategy to address nutrient pollution. However, not every state treats the term "nutrient reduction strategy" the same.

- Many states in the Mississippi River Basin, such as Iowa and Minnesota, have specific and detailed nutrient reduction strategies, while other states have general strategies regarding nutrient pollution reduction.
- North Carolina does not have a single nutrient reduction strategy for the whole state, but rather, a legislative mandate to develop and implement comprehensive, regulatory restoration strategies on an impaired watershed basis. This has led to the current set of large-watershed/river basin regulatory nutrient strategies and priorities for additional strategies.
- New York identified nutrients and pathogens and public use as priority concerns. Monitoring data collected through NYDEC monitoring programs was used to prioritize waterbodies on the 303(d) list for the development of TMDLs or other clean water plans.
- New Jersey has a *Nutrient Criteria Enhancement Plan* that provides a detailed description of the NJDEP's strategy for enhancing the existing nutrient criteria for freshwaters and developing new nutrient criteria for other waters of the state (i.e., estuarine and marine). In addition, New Jersey's *Nonpoint Source Management Program Plan 2015-2019* highlights the key actions that the state and its partners will use to address water quality issues caused by nonpoint sources to achieve water quality objectives.
- Maryland and the District of Columbia manage nutrients through the Chesapeake Bay Program and TMDL.
- Florida's 2013 *Implementation of Florida's Numeric Nutrient Standards* document describes how numeric nutrient standards in Florida Administrative Code (F.A.C.), Chapters 62-302 (Water Quality Standards) and 62-303 (Identification of Impaired Surface Waters), are implemented by Florida DEP. The major topics in the document include the hierarchical approach used to interpret the narrative nutrient criterion on a site-specific basis; a summary of the criteria for lakes, spring vents, streams, and estuaries; floral measures and the weight of evidence approach in streams; example scenarios for how the criteria will be implemented in the 303(d) assessment process; and a description of how the Water Quality Based Effluent Limitation ("WQBEL") process is used to implement the nutrient standards in wastewater permitting.

Question 9. What is the percent of lake/impoundment acres impaired due to nutrient-related causes (e.g., hypoxia, algal blooms, fish kills, etc.) in your state?

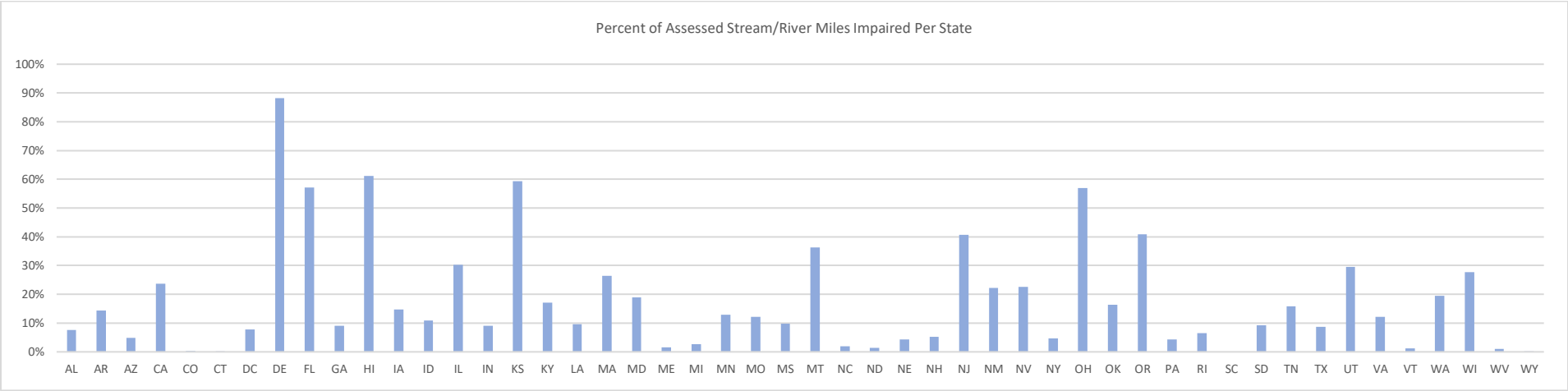


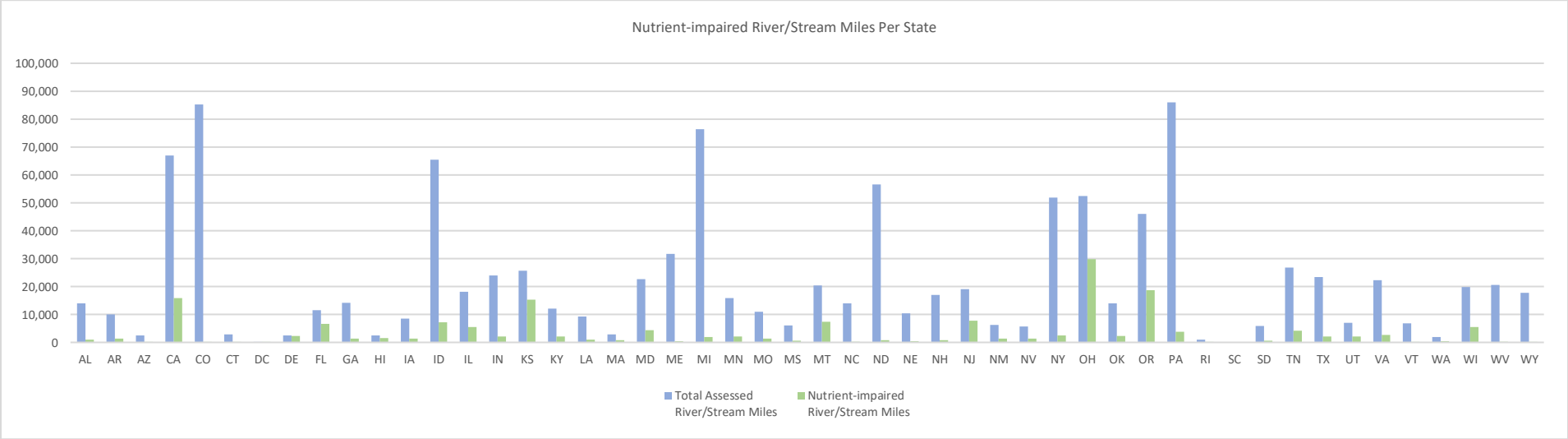


EPA submitted these data. The set includes data from forty-nine (49) states and the District of Columbia. There is no data for Alaska.

18,255,344 lake/impoundment acres are assessed nationally. 4,754,725 of those assessed acres are impaired for nutrients. The total percentage of assessed lake/impoundment acres in the country that are impaired for nutrients is 29.8%.

Question 10. What is the percent of assessed stream/river miles impaired due to nutrient-related causes (e.g., hypoxia, algal blooms, fish kills, etc.) in your state?

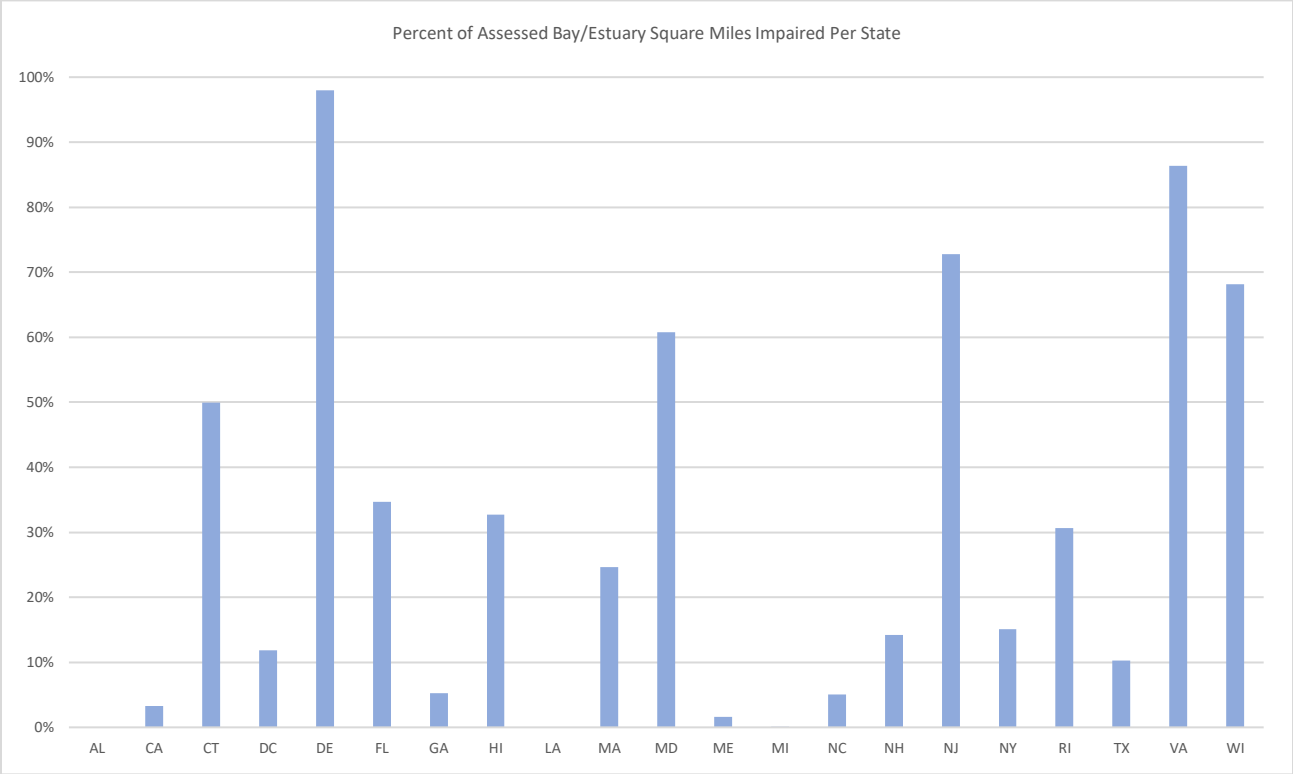


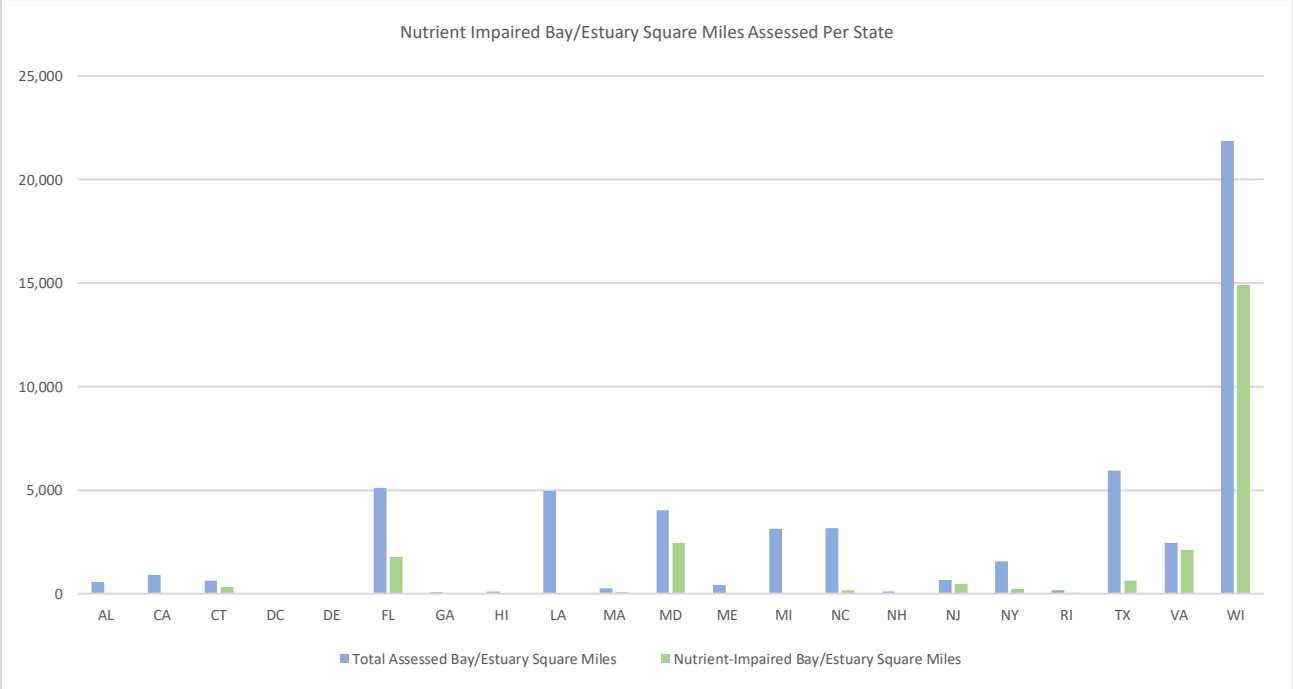


EPA submitted these data. The set includes data from forty-nine (49) states and the District of Columbia. There is no data for Alaska.

According to EPA, there over 3.5 million stream/river miles in the United States. 1,095,069 stream/river miles are assessed nationally. 171,198 of those assessed miles are impaired for nutrients. The total percentage of assessed stream/river miles in the country that are impaired for nutrients is 15.6%.

Question 11. What is the percent of assessed estuary acres impaired due to nutrient-related causes (e.g., hypoxia, algal blooms, fish kills, etc.) in your state?



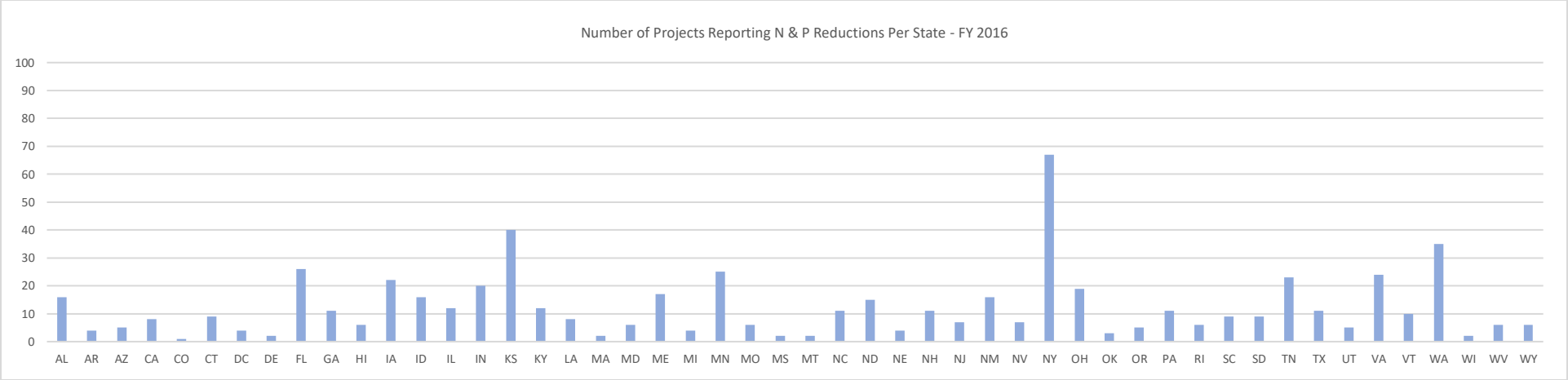


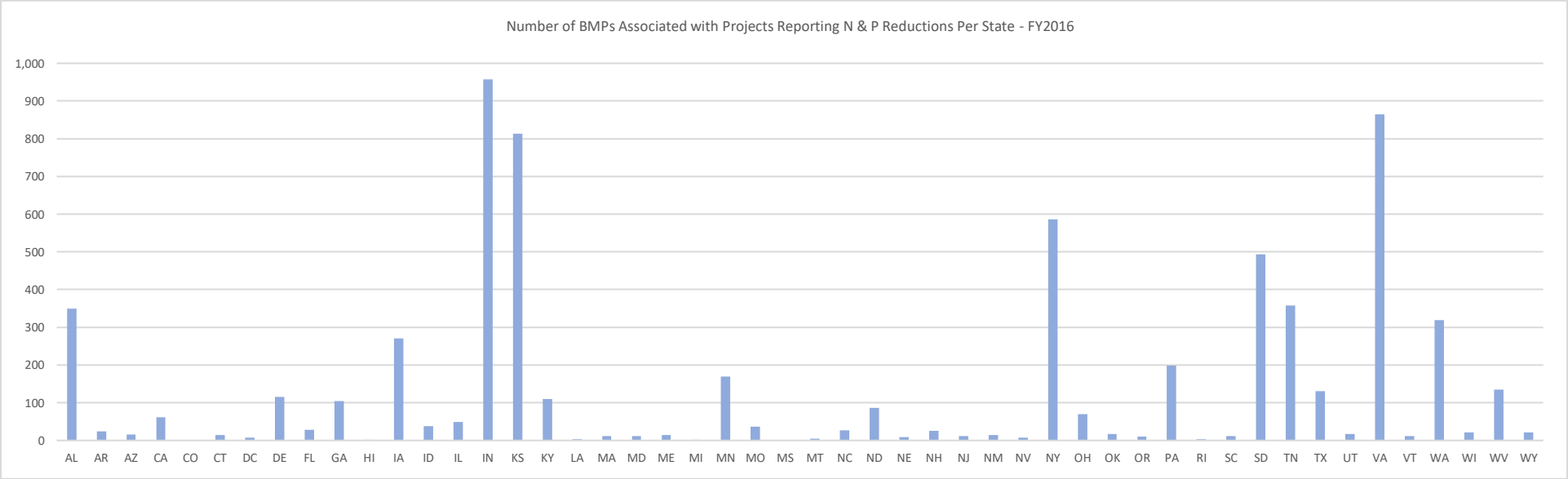
EPA submitted these data. The set includes data from twenty (20) states and the District of Columbia.

56,068 bay/estuary square miles are assessed nationally. 23,253 of those assessed square miles are impaired for nutrients. The total percentage of assessed bay/estuary square miles in the country that are impaired for nutrients is 41.5%

Part II: Nonpoint Source

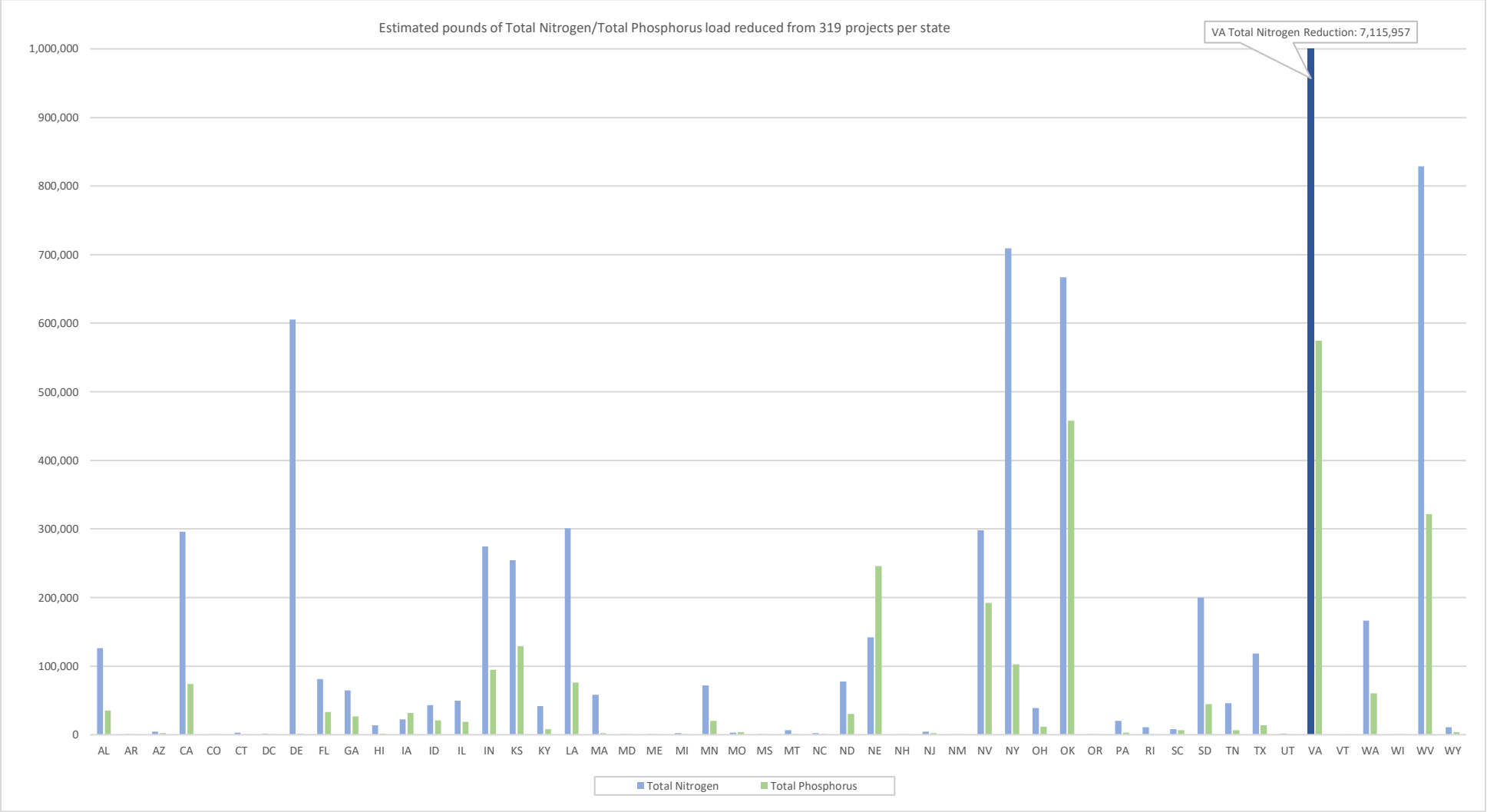
Question 12. Please provide the number of 319/Nonpoint Source projects, number and type of BMPs, and first year load reduction estimates per 319 Grant Reporting and Tracking System (GRTS)?





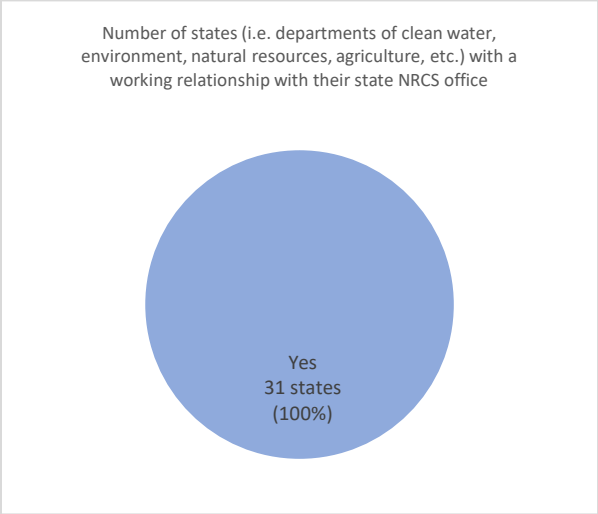
EPA submitted these data. The set represent FY2016 and includes data from forty-nine (49) states and the District of Columbia. There is no data for Alaska.

Question 13. Please provide the estimated pounds of TP and/or TN/TIN load reduced from 319 projects in your state in the last calendar year (March 19, 2016 – March 26, 2017).



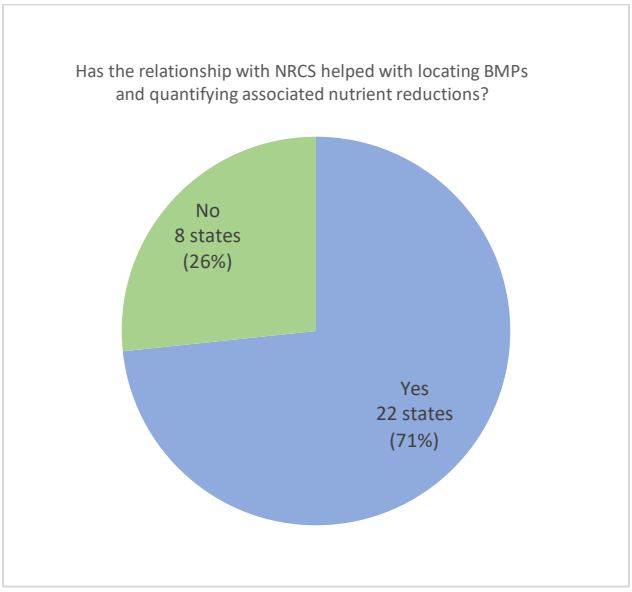
EPA submitted these data. The set includes data from forty-nine (49) states and the District of Columbia. There is no data for Alaska. Virginia is a significant outlier in this data set. Virginia Department of Environmental Quality is currently performing a thorough investigation of the source data to determine its accuracy.

Question 14. Does your state (i.e., departments of clean water, environment, natural resources, agriculture, etc.) have a working relationship with your state NRCS office (e.g., data sharing, MOU, etc.)?



Every state has a working relationship with their state NRCS office. However, the relationships vary. Some states have signed MOUs, agreements, or sit on committees with NRCS. Other states work through multiple state offices with NRCS or in an informal manner with NRCS. These relationships are generally strong and have resulted in significant collaboration on water quality improvement initiatives.

Question 15. If yes, has the relationship helped with locating BMPs and quantifying associated nutrient reductions?

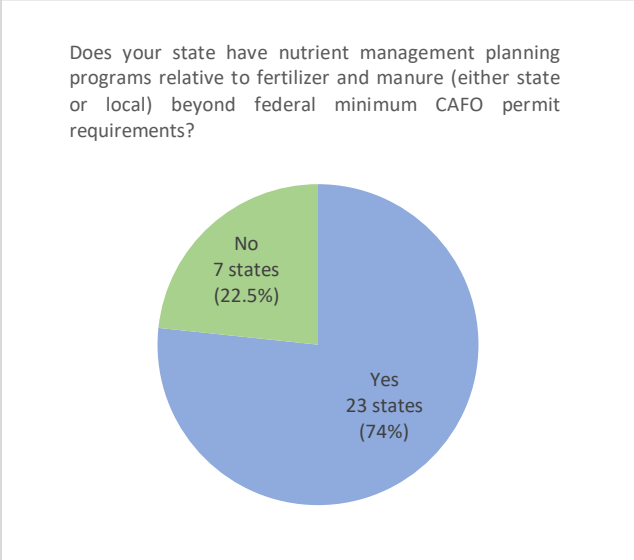


As shown in the graph, state responders expressed that local NRCS office have generally provided some sort of assistance in locating BMPs and quantifying nutrient reductions. States that answered "No" expressed that confidentiality and scale issues prevent this from occurring.

Question 16. If you answered "No" on Question 14, do you plan to reach out to NRCS?

All states that responded to the tracker have a working relationship with their local NRCS office.

Question 17. Does your state have nutrient management planning programs relative to fertilizer and manure (either state or local) beyond federal minimum CAFO permit requirements?

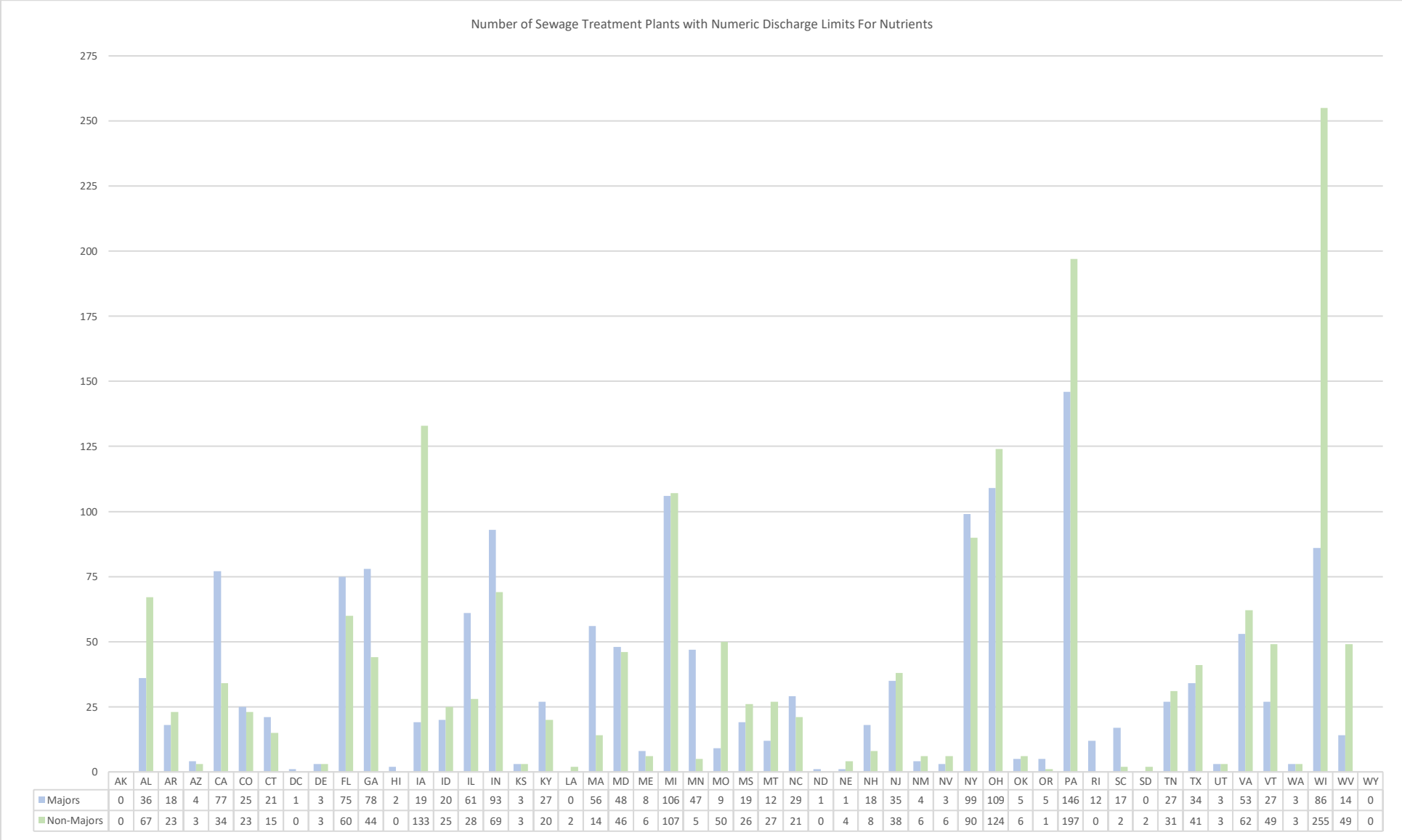


Most states have some sorts of nutrient management programs relative to fertilizers and manure beyond federal minimum CAFO permit requirements.

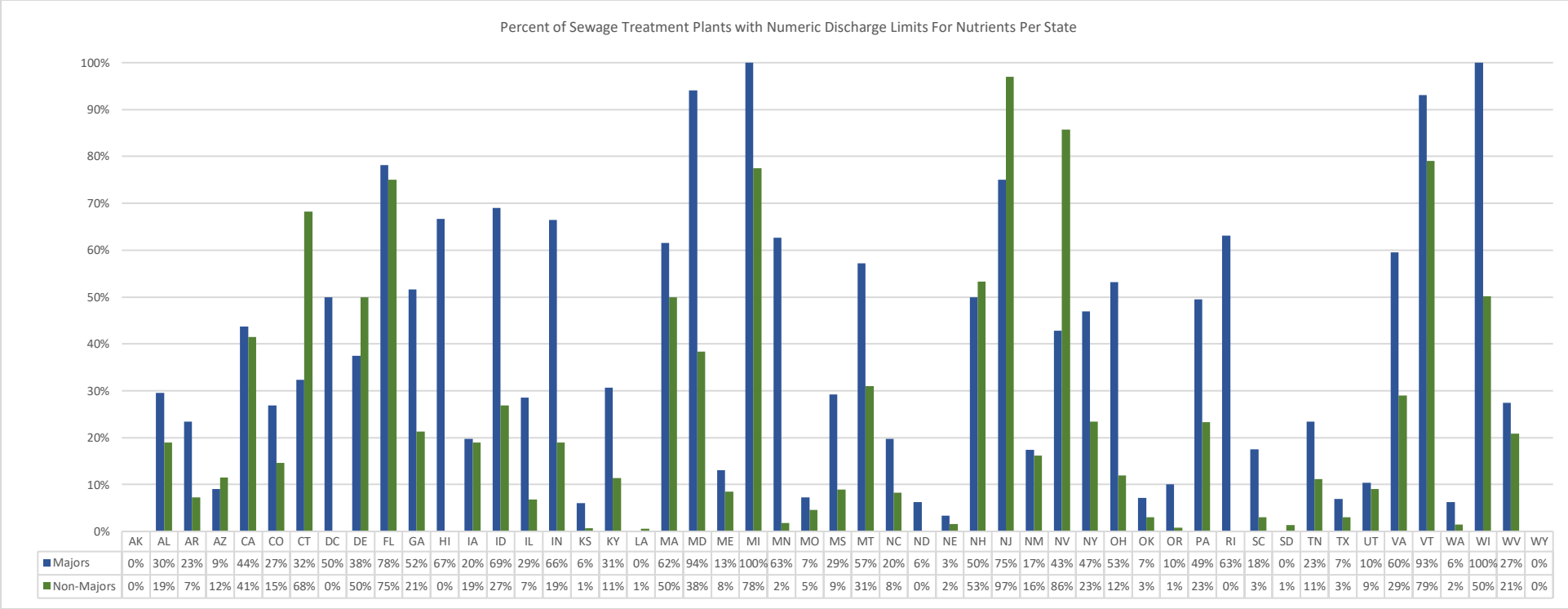
- Some states, like Missouri, New Hampshire, New York, and Rhode Island, have voluntary programs of various forms.
- Other states, like Florida, Illinois, North Carolina, Oregon, South Dakota, and Wisconsin, have mandatory programs codified through legislation or otherwise.
- Some states, like Alabama, Iowa, Texas, and Utah, offer technical assistance, information, and training through land grant university extension programs.
- Louisiana explained that while they do not have a program specifically for fertilizers and manure, they are covered under their state nonpoint source management plan.

Part III: Point Source

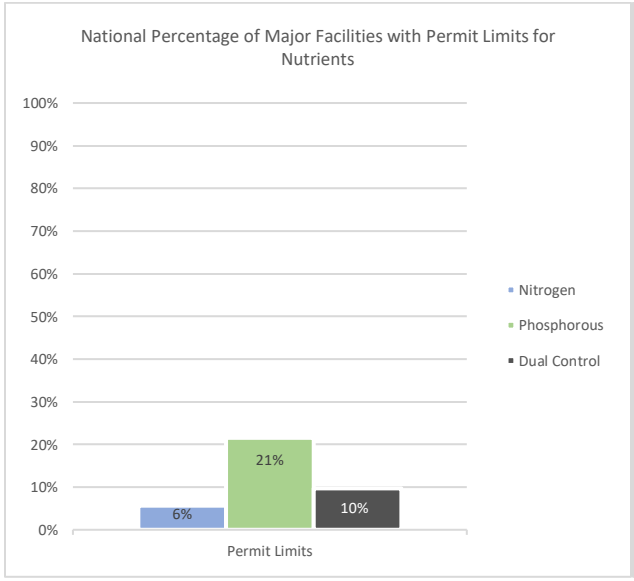
Question 18: Please provide the number and percent of major sewage treatment plants with numeric discharge limits for N and/or P compounds.

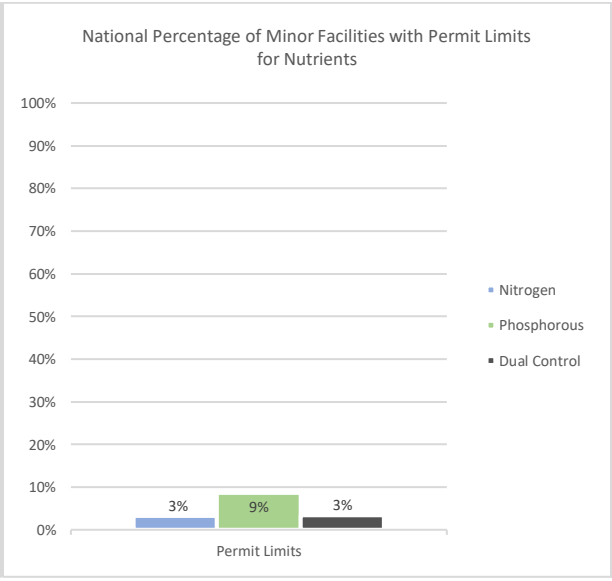


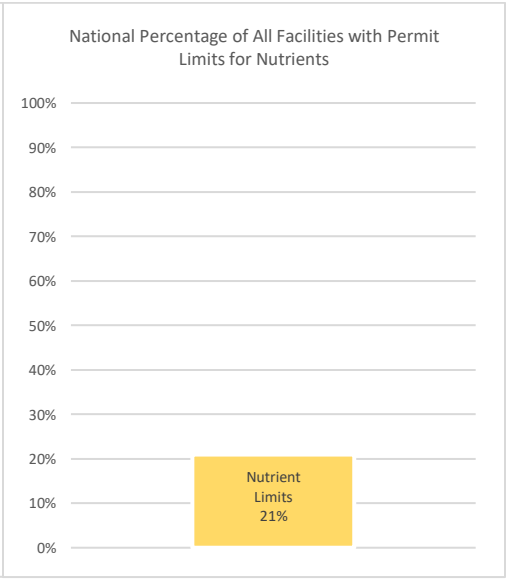
	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Majors	0	36	18	4	77	25	21	1	3	75	78	2	19	20	61	93	3	27	0	56	48	8	106	47	9	19	12	29	1	1	18	35	4	3	99	109	5	5	146	12	17	0	27	34	3	53	27	3	86	14	0
Non-Majors	0	67	23	3	34	23	15	0	3	60	44	0	133	25	28	69	3	20	2	14	46	6	107	5	50	26	27	21	0	4	8	38	6	6	90	124	6	1	197	0	2	2	31	41	3	62	49	3	255	49	0



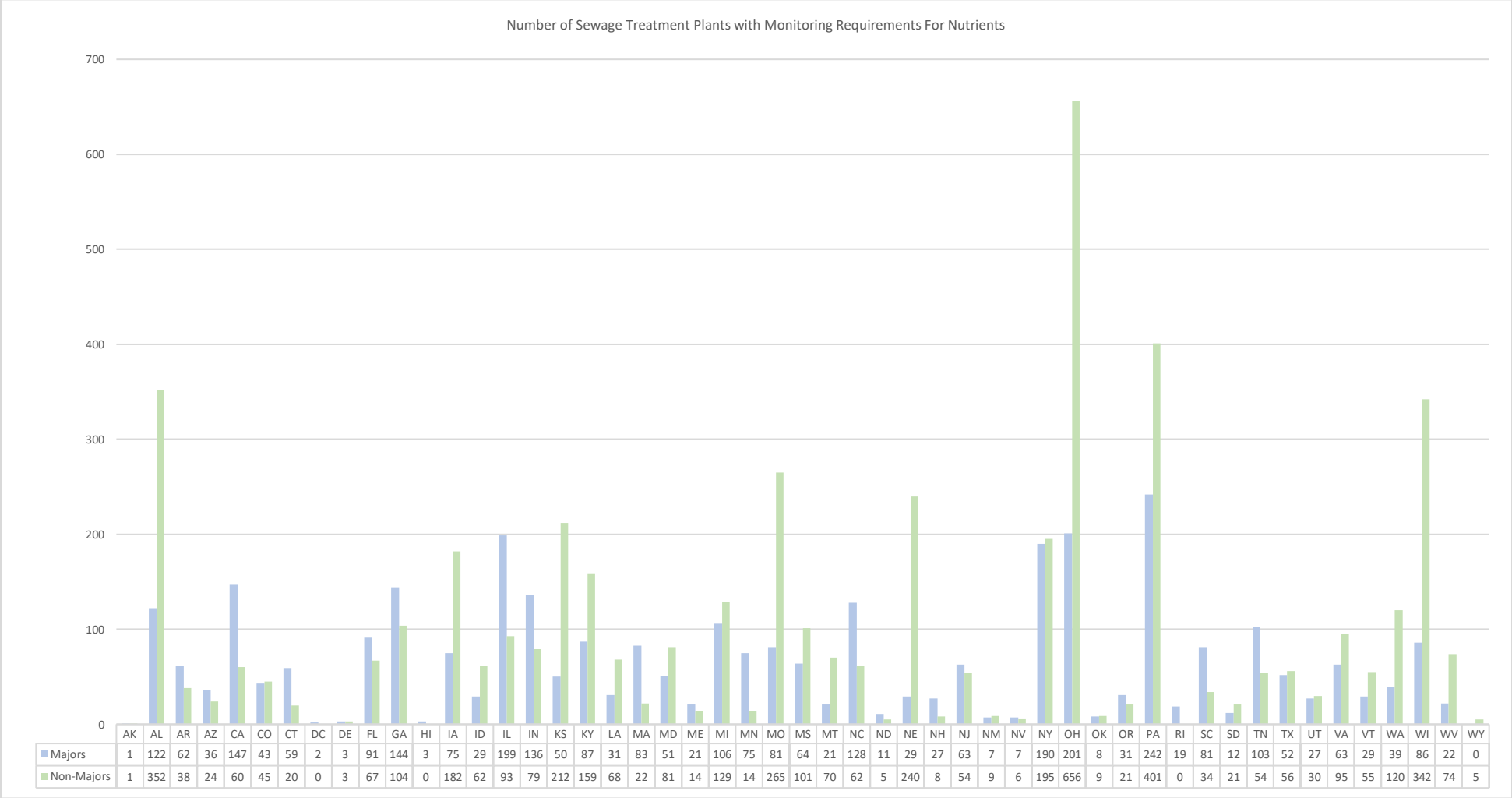
	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Majors	0%	30%	23%	9%	44%	27%	32%	50%	38%	78%	52%	67%	20%	69%	29%	66%	6%	31%	0%	62%	94%	13%	100%	63%	7%	29%	57%	20%	6%	3%	50%	75%	17%	43%	47%	53%	7%	10%	49%	63%	18%	0%	23%	7%	10%	60%	93%	6%	100%	27%	0%
Non-Majors	0%	19%	7%	12%	41%	15%	68%	0%	50%	75%	21%	0%	19%	27%	7%	19%	1%	11%	1%	50%	38%	8%	78%	2%	5%	9%	31%	8%	0%	2%	53%	97%	16%	86%	23%	12%	3%	1%	23%	0%	3%	1%	11%	3%	9%	29%	79%	2%	50%	21%	0%



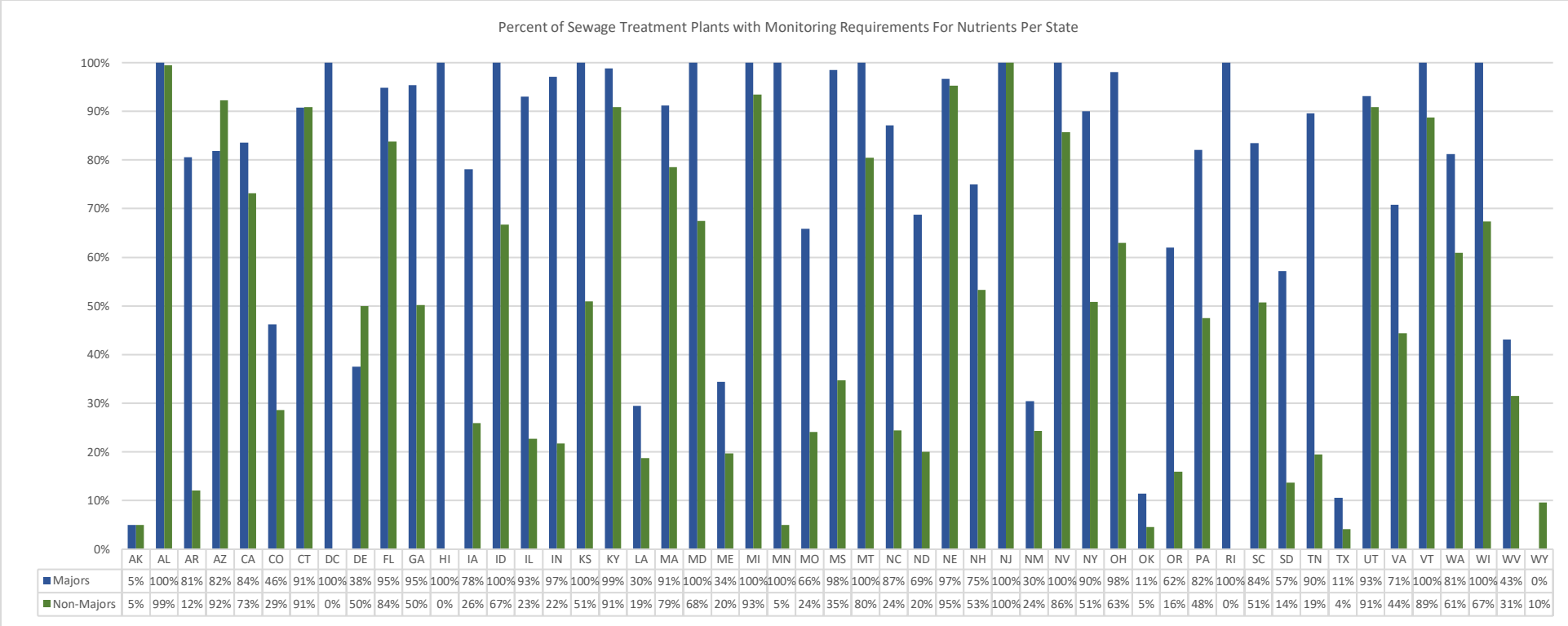




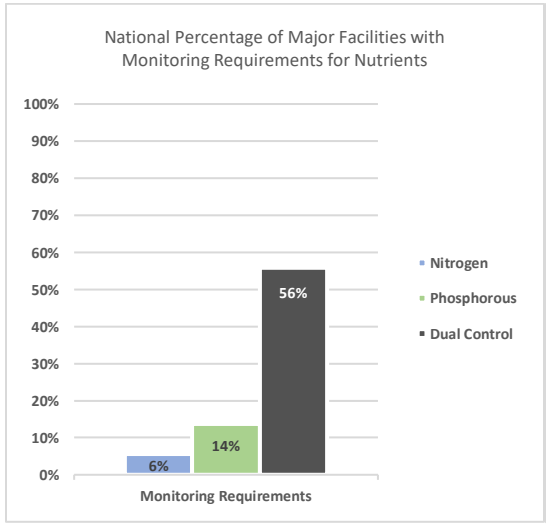
Question 19: Please provide the number and percent of major sewage treatment plants with N and/or P monitoring requirements for monitoring-only purposes or for compliance with an effluent limit.

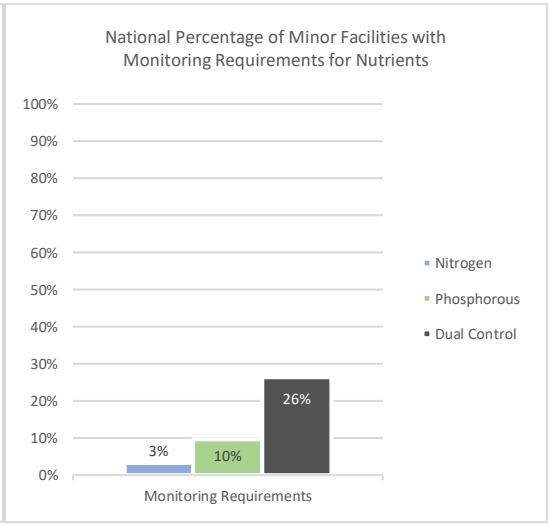


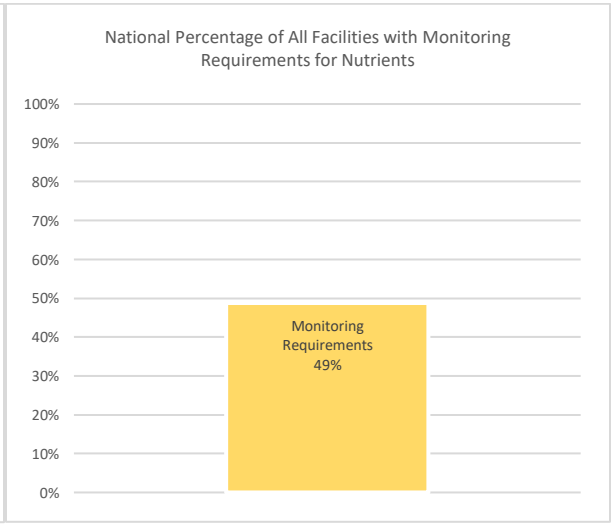
	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Majors	1	122	62	36	147	43	59	2	3	91	144	3	75	29	199	136	50	87	31	83	51	21	106	75	81	64	21	128	11	29	27	63	7	7	190	201	8	31	242	19	81	12	103	52	27	63	29	39	86	22	0
Non-Majors	1	352	38	24	60	45	20	0	3	67	104	0	182	62	93	79	212	159	68	22	81	14	129	14	265	101	70	62	5	240	8	54	9	6	195	656	9	21	401	0	34	21	54	56	30	95	55	120	342	74	5



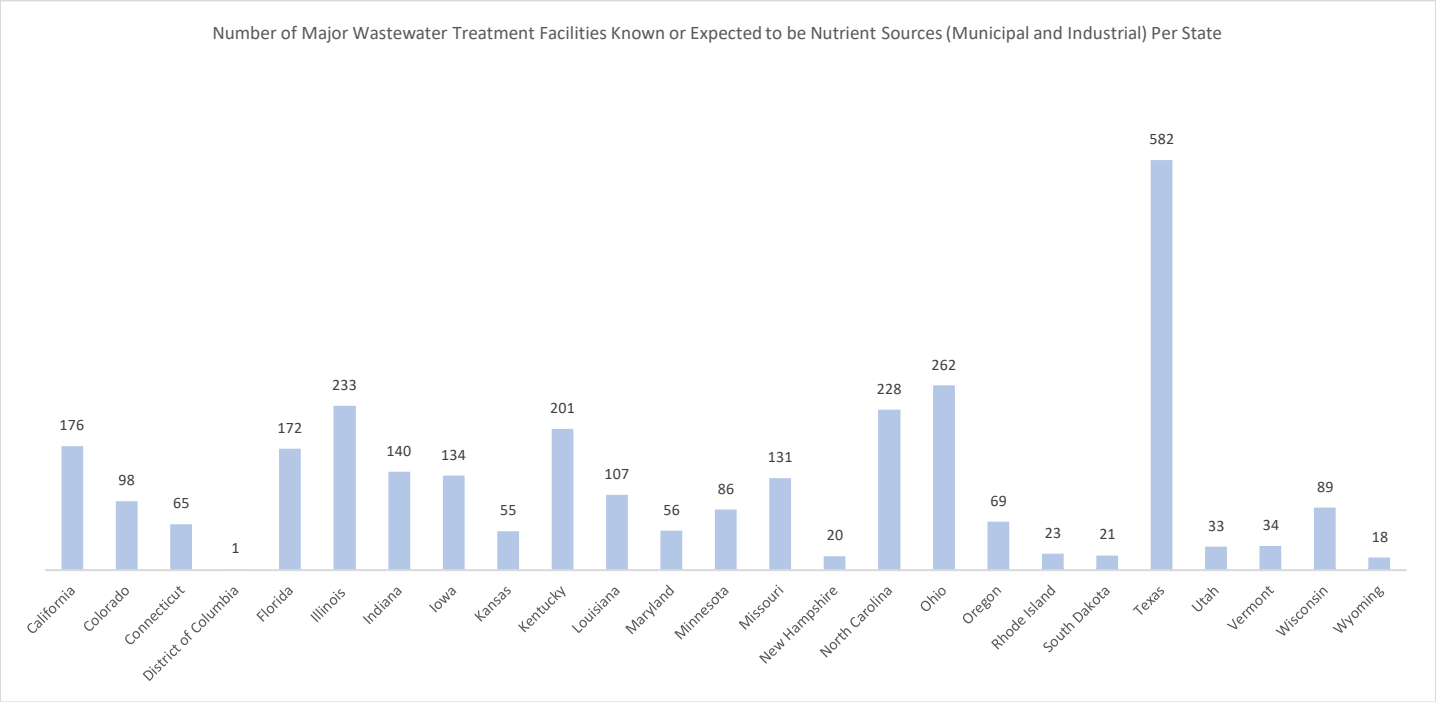
	AK	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS	KY	LA	MA	MD	ME	MI	MN	MO	MS	MT	NC	ND	NE	NH	NJ	NM	NV	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Majors	5%	100%	81%	82%	84%	46%	91%	100%	38%	95%	95%	100%	78%	100%	93%	97%	100%	99%	30%	91%	100%	34%	100%	100%	66%	98%	100%	87%	69%	97%	75%	100%	30%	100%	90%	98%	11%	62%	82%	100%	84%	57%	90%	11%	93%	71%	100%	81%	100%	43%	0%
Non-Majors	5%	99%	12%	92%	73%	29%	91%	0%	50%	84%	50%	0%	26%	67%	23%	22%	51%	91%	19%	79%	68%	20%	93%	5%	24%	35%	80%	24%	20%	95%	53%	100%	24%	86%	51%	63%	5%	16%	48%	0%	51%	14%	19%	4%	91%	44%	89%	61%	67%	31%	10%





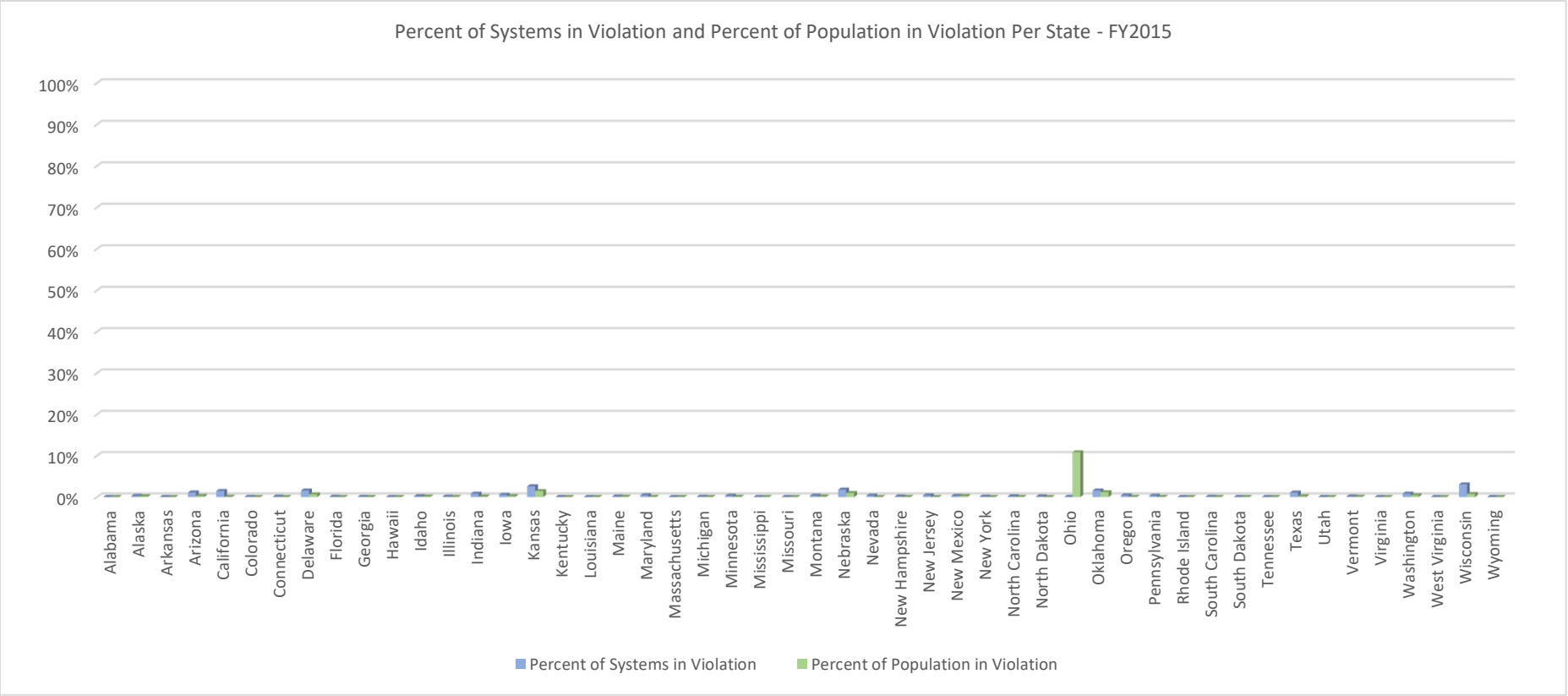


Question 20. How many major wastewater treatment facilities known or expected to be nutrient sources (municipal and industrial) are in your state?



Part IV: Drinking Water

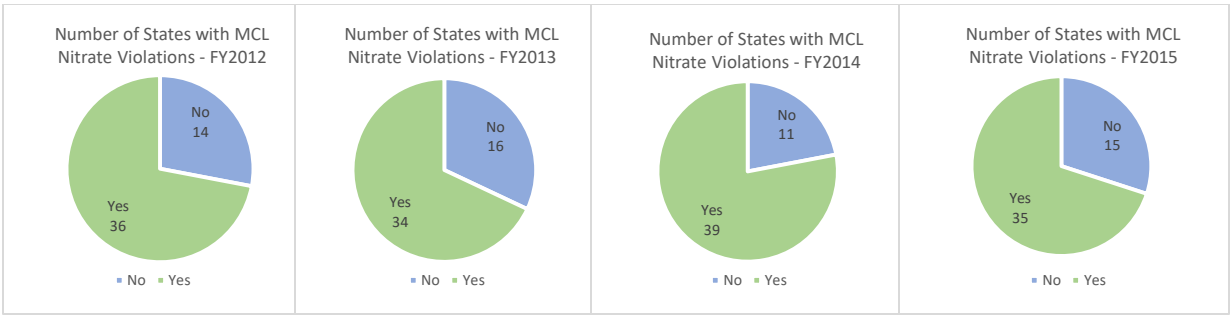
Question 21. Please provide the number and percent of public water systems in your state and the population they serve that violated the nitrate MCL in 2012, 2013, 2014, and 2015.

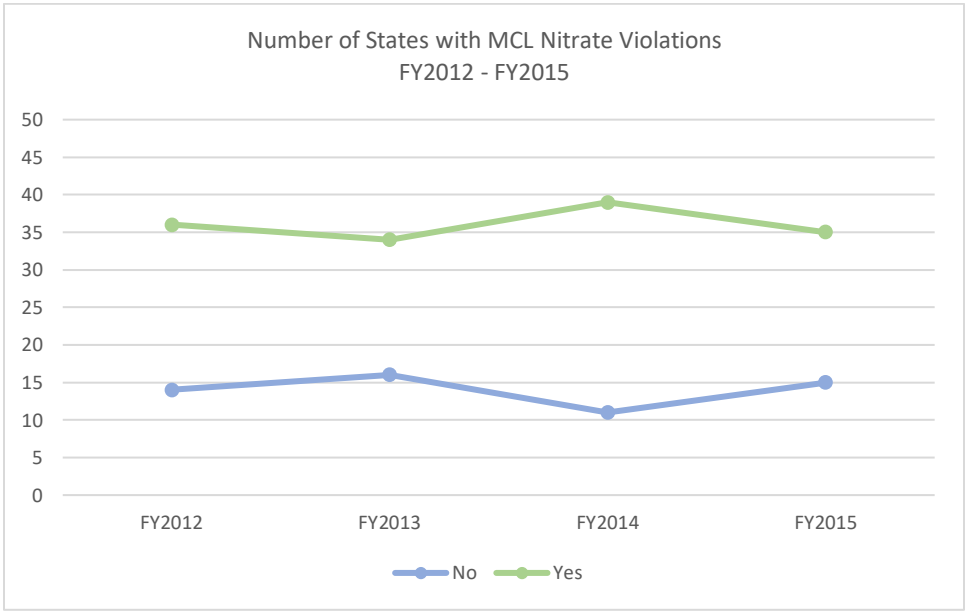


EPA submitted these data. The set includes data from fifty (50) states. The District of Columbia is not included.

Most of the percentages are quite low for both FY2015 metrics shown in the graph above.

In many states showing violations, the percent of systems in violation is much higher than the percent of population served by those systems. This mean that the systems most in violation in these states are those that serve small populations.





These graphs show the number of states that had a nitrate violation in public water systems each year from FY2012 to FY2015. The line graph shows that there has been no discernable trend. ACWA is working with ASDWA to refine this question to better capture what actions states are states are taking reduce nutrients in drinking water sources.

Question 22. Please provide your state's best estimate of the number and percent of public water systems actively operating to meet the nitrate MCL (e.g., via treatment or blending).

Twenty-one (21) out of thirty (30) states and the District of Columbia currently have systems operating to meet the nitrate MCL. According to the data collected for the tracker, only 981 systems nationally are doing so. These states have a total of 71,108 public water systems. Therefore, according to the data collected for the tracker 1.38% of public water systems are operating to meet the nitrate MCL.

Part V: Other

Question 23. Please briefly describe any other efforts your state is employing to make progress on reducing nutrient pollution in state waters.

States are employing various other efforts to make progress on reducing nutrient pollution in their waters. Thirteen (13) states responded that they established or are in the process of developing nutrient TMDLs. States have developed TMDLs for many types of state waters, including small and large lakes, streams, rivers, estuaries, marine waters, and drinking water sources. Twelve (12) states are actively addressing stormwater and nonpoint source pollution through MS4 permits, watershed-based plans, statewide programs, and other methods. Eight (8) states indicated that they are either currently optimizing treatment facilities or looking into it. Four (4) states listed that they have employed water quality trading programs for nutrients. Lastly, five (5) states either currently have numeric nutrient standards or are in the development process. Specifically:

- California currently has 1,356 water bodies impaired by nutrients on the 303(d) List that are being addressed with management actions including TMDLs and alternative source reductions. Controls of cyanobacteria blooms are also an ongoing topic of management in California. It is anticipated that many of California's nutrient related water quality problems will be addressed in part by the ongoing development of a statewide water quality objective for biostimulatory substances along with a program to implement the objective. It is anticipated that this objective will go before the State Water Resources Control Board for approval in Spring 2020.

- Colorado has a 10-year plan to adopt nutrient criteria for all state waters. In addition, Colorado Department of Public Health and Environment adopted a Voluntary Incentive Program that would allow any discharger of nutrients that voluntarily reduces nutrients to earn an incentive in the form of an extended compliance schedule. This extended compliance schedule would be granted after nutrient criteria are adopted statewide and implemented into NPDES permits.

- Illinois EPA develops TMDLs for Total Phosphorus ("TP") in lakes. TMDLs are also developed for nitrate in streams and lakes that are designated as public water supplies use. Implementation Plans are written for each TMDL and these plans are required to meet USEPA's Nine Minimum Elements. The Illinois EPA 319 program tracks BMP implementation and calculates load reductions for nitrogen, phosphorus, and sediment from each BMP. 319 applications located in priority watersheds to reduce nutrient loss are given higher consideration. Further, the Illinois Nutrient Loss Reduction Strategy ("INLRS") was completed in 2015. Illinois EPA and the Illinois Department of Agriculture coordinate the implementation of the INLRS. Illinois EPA has partnered with the University of Illinois Extension to hire two watershed coordinators to work in priority watersheds and serve as a technical resource for watershed planning and implementation to reduce nutrient loss. Illinois EPA encourages point sources and MS4 urban stormwater permittees to take a watershed approach to address nutrient reductions. Lastly, all major point sources must develop feasibility studies (0.5 and 0.1mg/L TP) and optimization studies. Permit renewals are generally receiving 1.0 mg/L TP and nitrogen monitoring as a requirement.

- Iowa employs a holistic approach to nutrient reduction through the Iowa Nutrient Reduction Strategy. Developed through a partnership between the Iowa Department of Agriculture and Land Stewardship, the Iowa Department of Natural Resources, and the Iowa State University College of Agriculture and Life Sciences, the strategy is a science and technology-based framework to assess and reduce nutrients to Iowa waters and the Gulf of Mexico. It is designed to direct efforts to reduce nutrients in surface water from both point and nonpoint sources in a scientific, reasonable, and cost-effective manner. Further, the strategy outlines a pragmatic approach for

reducing nutrient loads discharged from the state's largest wastewater treatment plants, in combination with targeted practices designed to reduce loads from nonpoint sources such as farm fields.

- In 2015, Utah adopted the Technology Based Phosphorus Effluent Limit Rule which requires all mechanical plants discharging wastewater to surface waters of the state to provide treatment processes which will produce effluent less than or equal to an annual mean of 1.0 mg/L TP by January 1, 2020, unless granted a variance. Lagoons must comply with a phosphorus loading cap of 125% of the current total annual phosphorus load by July 1, 2018. In addition, as of July 1, 2015, all discharging treatment works are required to monitor and report influent and effluent wastewater for phosphorus and nitrogen concentrations monthly. It is estimated that this rule will reduce phosphorus discharges from treatment plants by 66% and reduce phosphorus concentrations in receiving streams by 50% on average once fully implemented.

- Vermont's nutrient pollution reduction efforts are driven by the Vermont Clean Water Act, passed in July 2015. The Act established additional financial and statutory support for implementing nutrient TMDLs statewide. Also, the Act established the Vermont Clean Water Fund and additional water quality regulations addressing agriculture and stormwater from developed lands and roads.

Conclusion

This report is the first in what will be a series of reports on state nutrient reduction progress based on information from the Nutrient Reduction Progress Tracker. The NWG will continue to refine the tracker questions and dig deeper on certain results as the project moves forward. The tracker will build upon itself each year, allowing for better tracking and understanding of state nutrient reduction progress and trends nationwide.

Even though this is the first year of this effort, the results make it clear that states are taking significant, yet varied, actions to reduce nutrient loads in their waters. States are also collaborating with their publicly owned treatment facilities, state drinking water partners, state agriculture departments, federal agencies, conservation offices, NGOs, the private sector, and other entities to reduce nutrient pollution.

Association of Clean Water Administrators
ACWA
The Voice of States & Interstates
est. 1961